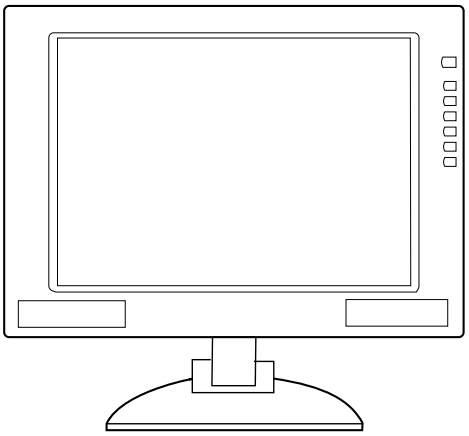
SDM-M51

SERVICE MANUAL

US Model
Canadian Model
AEP Model



SPECIFICATIONS

LCD panel	Panel type: a-Si TFT Active Matrix Picture size: 15.1 inch
Input signal format	RGB operating frequency* Horizontal: 28 – 64 kHz Vertical: 48 – 75 Hz
Resolution	Horizontal: Max.1024 dots Vertical: Max.768 lines
Input signal levels	RGB video signal 0.7 Vp-p, 75 Ω, positive SYNC signal TTL level, 2.2 kΩ, positive or negative (Separate horizontal and vertical, or composite sync) 0.3 Vp-p, 75Ω, negative (Sync on green)
Audio output	1 W × 2
Headphones jack	Stereo minijack Accepts impedance of 16 – 48 Ω
AUDIO IN jack	Stereo minijack Accepts impedance of 47 kΩ Accepts level 0.5 Vrms
Power requirements	100 – 240 V, 50 – 60 Hz, 0.4 – 0.2 A
DC input	DC 18 V (supplied AC adapter)
Power consumption	Max. 19 W Max. 22 W (including AC adapter)
Operating temperature	5 – 35 ˚C
Dimensions (width/height/depth)	Display (upright): Approx. 387 × 345 × 180 mm ($15\ ^{1}/_{4} \times 13\ ^{5}/_{8} \times 7\ ^{1}/_{8}$ inches) (with stand) Approx. 387 × 296 × 48 mm ($15\ ^{1}/_{4} \times 11\ ^{3}/_{4} \times 1\ ^{15}/_{16}$ inches) (without stand)
Mass	Approx. 4.6 kg (10 lb 14 oz) (with stand)
Plug & Play	DDC1/DDC2B/DDC2Bi
Accessories	See page 7.

* Recommended horizontal and vertical timing condition
- Horizontal sync width duty should be more than 4.8% of total horizontal time or 0.8 µs, whichever is larger.
- Horizontal blanking width should be more than 2.5 µsec.
- Vertical blanking width should be more than 450 µsec.

Design and specifications are subject to change without notice.

TFT LCD COLOR COMPUTER DISPLAY

SONY®

Power saving function

This monitor meets the power-saving guidelines set by VESA, ENERGY STAR, and NUTEK. If the monitor is connected to a computer or video graphics board that is DPMS (Display Power Management Signaling) compliant, the monitor will automatically reduce power consumption in three stages as shown below.

Power mode	Power consumption*	⏻ (power) indicator
normal operation	19 W (22 W)	green
active off** (deep sleep)*	1 W (2 W)	orange***
power off	1 W (2 W)	off

* "deep sleep" is the power saving mode defined by the Environmental Protection Agency.

** When your computer enters the "active off" mode, the input signal is cut and NO INPUT SIGNAL appears on the screen. After 20 seconds, the monitor enters the power saving mode.

*** If the horizontal or vertical sync signal is received by the monitor, the power indicator may alternately blink green and orange.

Automatic picture quality adjustment function

When the monitor receives an input signal, it automatically matches the signal to one of the factory preset modes stored in the monitor's memory to provide a high quality picture at the center of the screen. (See Appendix for a list of the factory preset modes.)

For input signals that do not match one of the factory preset modes, the automatic picture quality adjustment function of this monitor automatically adjusts the picture position, phase, and pitch, and ensures that a clear picture appears on the screen for any timing within the monitor's frequency range (horizontal: 28 – 64 kHz, vertical: 48 – 75 Hz).

Consequently, the first time the monitor receives input signals that do not match one of the factory preset modes, the monitor may take a longer time than normal for displaying the picture on the screen. This adjustment data is automatically stored in memory so that next time, the monitor will function in the same way as when the monitor receives the signals that match one of the factory preset modes.

In all modes as above, if the picture is adjusted, the adjustment data is stored as a user mode and automatically recalled whenever the same input signal is received.

Note

While the automatic picture quality adjustment function is activated, only the ⏻ (power) switch will operate.

TIMING SPECIFICATION

PRESET MODE	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6	MODE 7	MODE 8
SIGNAL MODE	VESA 60Hz	MAC 66Hz	VESA 75Hz	VESA 70Hz	VESA 56Hz	VESA 60Hz	VESA 72Hz	VESA 75Hz
RESOLUTION	640 X 480	640 X 480	640 X 480	720 X 400	800 X 600	800 X 600	800 X 600	800 X 600
DOT CLOCK	25.175 MHz	30.240 MHz	31.500 MHz	28.350 MHz	36.000 MHz	40.000 MHz	50.000 MHz	49.500 MHz
HORIZONTAL	usec	usec	usec	usec	usec	usec	usec	usec
H. TOTAL	31.778	28.571	26.667	31.746	28.444	26.400	20.800	20.110
H. SYNC	3.813	2.116	2.032	3.810	0.889	3.200	2.400	1.616
H. BP	1.907	3.175	3.810	1.905	4.667	2.200	1.280	3.232
H. ACTIV	25.422	21.164	20.317	25.397	22.222	20.000	16.000	16.162
VERTICAL	msec	msec	msec	msec	msec	msec	msec	msec
V. TOTAL	16.683	15.000	13.333	14.254	17.778	16.579	13.853	13.333
V. SYNC	0.064	0.086	0.080	0.095	0.057	0.106	0.125	0.064
V. BP	1.049	1.114	0.427	1.079	0.626	0.607	0.478	0.448
V. ACTIV	15.253	13.714	12.800	12.698	17.067	15.840	12.480	12.800
H/V POLARITY	N/N	N/N	N/N	N/P	N/N	P/P	N/N	P/P

PRESET MODE	MODE 9	MODE 10	MODE 11	MODE 12	MODE 13
SIGNAL MODE	PMAC 16"	VESA 60Hz	VESA 70Hz	VESA 75Hz	MAC 768 75Hz
RESOLUTION	832X 624	1024X 768	1024X 768	1024X 768	1024X 768
DOT CLOCK	57.285 MHz	65.000 MHz	75.000 MHz	78.750 MHz	80.000 MHz
HORIZONTAL	usec	usec	usec	usec	usec
H. TOTAL	20.110	20.677	17.707	16.660	16.600
H. SYNC	1.117	2.092	1.813	1.219	1.200
H. BP	3.910	2.462	1.920	2.235	2.200
H. ACTIV	14.524	15.754	13.653	13.003	12.800
VERTICAL	msec	msec	msec	msec	msec
V. TOTAL	13.413	16.666	14.272	13.328	13.346
V. SYNC	0.060	0.124	0.106	0.050	0.050
V. BP	0.744	0.600	0.513	0.466	0.498
V. ACTIV	12.549	15.880	13.599	12.795	12.749
H/V POLARITY	N/N	N/N	N/N	P/P	N/N

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC Leakage. Check leakage as described below.

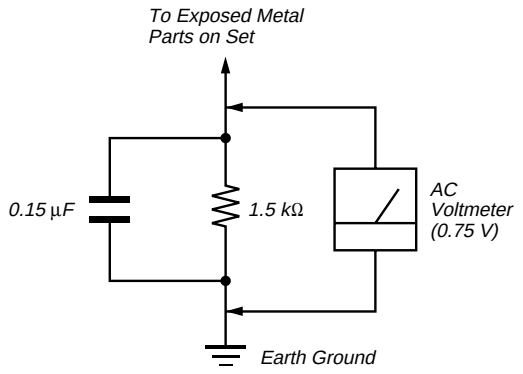


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers).

Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOMs that are suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

WARNING!!

NEVER TURN ON THE POWER IN A CONDITION IN WHICH THE DEGAUSS COIL HAS BEEN REMOVED.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

AVERTISSEMENT!!

NE JAMAIS METTRE SOUS TENSION QUAND LA BOBINE DE DEMAGNETISATION EST ENLEVÉE.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE ⚠ SONT CRITIQUES POUR LA SÉCURITÉ. NE LES REMPLACER QUE PAR UNE PIÈCE PORTANT LE NUMÉRO SPECIFIÉ. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

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SECTION 1
GENERAL

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remein as in the manual.

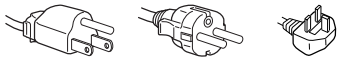
1-1

Precautions

Warning on power connections

- Use the supplied power cord. If you use a different power cord, be sure that it is compatible with your local power supply.
  For the customers in the U.S.A.
  If you do not use the appropriate cord, this monitor will not conform to mandatory FCC standards.
  For the customers in the UK
  If you use the monitor in the UK, be sure to use the appropriate UK power cord.

Example of plug types



for 100 to 120 V AC for 200 to 240 V AC for 240 V AC only

For use only with power supply LIEN, LE-9702B-01A

The equipment should be installed near an easily accessible outlet.

Installation

Do not install or leave the monitor:

- In places subject to extreme temperatures, for example near a radiator, heating vent, or in direct sunlight. Subjecting the monitor to extreme temperatures, such as in an automobile parked in direct sunlight or near a heating vent, could cause deformations of the casing or malfunctions.
- In places subject to mechanical vibration or shock.
- Near any equipment that generates a strong magnetic field, such as a TV or various other household appliances.
- In places subject to inordinate amounts of dust, dirt, or sand, for example near an open window or an outdoor exit. If setting up temporarily in an outdoor environment, be sure to take adequate precautions against airborne dust and dirt. Otherwise irreparable malfunctions could occur.

Handling the LCD screen

- Do not leave the LCD screen facing the sun as it can damage the LCD screen. Take care when you place the monitor by a window.
- Do not push on or scratch the LCD screen. Do not place a heavy object on the LCD screen. This may cause the screen to lose uniformity or cause LCD panel malfunctions.
- If the monitor is used in a cold place, a residual image may appear on the screen. This is not a malfunction. The screen returns to normal as the temperature rises to a normal operating level.
- If a still picture is displayed for a long time, a residual image may appear for a while. The residual image will eventually disappear.
- The LCD panel becomes warm during operation. This is not a malfunction.

About the built-in stereo speaker

Be sure to keep magnetic recording equipment, tapes, and floppy discs away from the speaker's opening as the speakers generate a magnetic field. This magnetic field may affect data stored on magnetic tapes and discs.

About the bright points of light or black dots

Bright points of light (red, blue or green) or black dots may appear on the LCD screen. This is not a malfunction. The LCD screen is made with high-precision technology and more than 99.99 % of the picture element is intact. However, some of the picture element may not appear or some of the picture element may appear constantly.

Replacement of the fluorescent tube

A specially designed fluorescent tube is installed as the lighting apparatus for this monitor. If the screen becomes dark, unstable, or does not turn on, replace the fluorescent tube with a new one. Consult your Sony dealer when replacing the fluorescent tube.

Maintenance

- Be sure to unplug the power cord from the power outlet before cleaning your monitor.
- Clean the LCD screen with a soft cloth. If you use a glass cleaning liquid, do not use any type of cleaner containing an anti-static solution or similar additive as this may scratch the LCD screen's coating.
- Clean the cabinet, panel, and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder, or solvent, such as alcohol or benzine.
- Do not rub, touch, or tap the surface of the screen with sharp or abrasive items such as a ballpoint pen or screwdriver. This type of contact may result in a scratched picture tube.
- Note that material deterioration or LCD screen coating degradation may occur if the monitor is exposed to volatile solvents such as insecticide, or if prolonged contact is maintained with rubber or vinyl materials.

Transportation

- Disconnect all cables from the monitor and grasp the support and base sections of the display stand firmly with both hands when transporting. If you drop the monitor, you may be injured or the monitor may be damaged.
- When you transport this monitor for repair or shipment, use the original carton and packing materials.

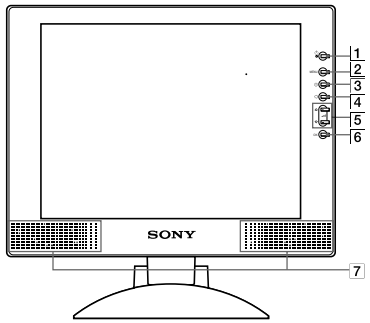
Disposal of the monitor

- **Do not dispose of this monitor with general household waste.**
- **The fluorescent tube used in this monitor contains mercury. Disposal of this monitor must be carried out in accordance to the regulations of your local sanitation authority.**

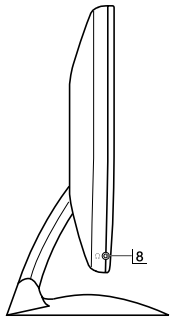
Identifying parts and controls

See the pages in parentheses for further details.

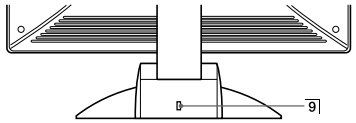
Front of the LCD display



Side view of the LCD display



Rear of the display stand



1 ⏻ **(Power) switch and indicator (pages 9, 17, 21)**
This switch turns the display on and off.
The power indicator lights up in green when the display is turned on, and either flashes in green and orange, or lights up in orange when the monitor is in power saving mode.

2 **MENU button (pages 11, 12)**
This button displays the main menu.

3 ◑ **(contrast) button (page 12)**
This button displays the CONTRAST menu.

4 ☼ **(brightness) button (page 12)**
This button displays the BRITGHTNESS menu.

5 ◿ **(volume) +/– and ↑(+)/↓(–) buttons (pages 9, 12)**
These buttons display the VOLUME menu and function as the ↑(+)/↓(–) buttons when selecting the menu items and making adjustments.

6 **OK button (page 12)**
This button selects the item or executes the settings in the menu.

7 **Stereo speaker (page 9)**
This outputs the audio signals as sound.

8 **Headphones jack (page 9)**
This jack outputs audio signals to the headphones.

9 **Security Lock Hole (🔒)**
The security lock hole should be applied with the Kensington Micro Saver Security System.
Micro Saver Security System is a trademark of Kensington.

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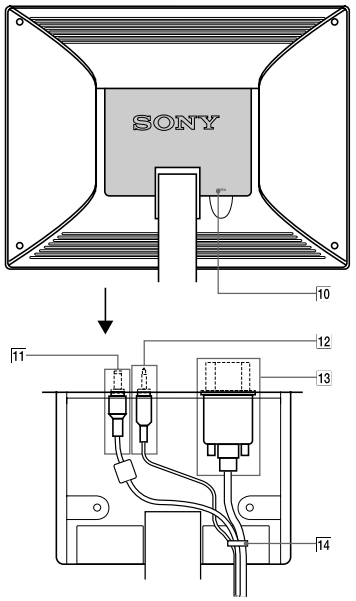
(continued)

Rear of the LCD display

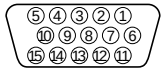


10 Back cover (page 8)
Open this cover when you connect/disconnect cables or cords.

11 DC IN connector/AC adapter (page 8)
This connector provides DC power to the display. Connect the AC adapter to this connector.

12 AUDIO IN jack/Audio cord (page 8)
This jack inputs audio signals when connecting to the audio output jack of the computer or other audio equipment.

13 HD15 (RGB) input connector/HD15 (RGB) video signal cable (page 7)
This connector inputs RGB video signals (0.7 Vp-p, positive) and SYNC signals.



Pin No.	Signal
1	Red
2	Green (Sync on Green)
3	Blue
4	ID (Ground)
5	DDC Ground*
6	Red Ground
7	Green Ground
8	Blue Ground
9	DDC + 5V*
10	Ground
11	ID (Ground)
12	Bi-Directional Data (SDA)*
13	H. Sync
14	V. Sync
15	Data Clock (SCL)*

* DDC (Display Data Channel) is a standard of VESA.

14 Cable holder (page 8)
This part secures cables and cords to the monitor.

Setup

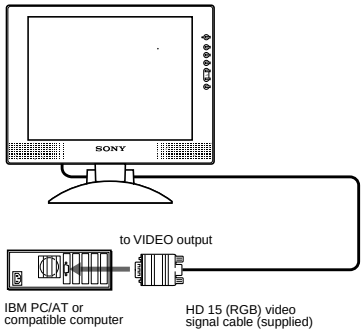
Before using your monitor, check that the following accessories are included in your carton:
- LCD display
- Power cord
- AC adapter
- HD15 (RGB) video signal cable (this cable is already connected to the monitor)
- Audio cord (stereo miniplug)
- Cord clip (2)
- Macintosh adapter
- Windows Monitor Information/Windows Utility/Macintosh Utility Disk
- Warranty card
- Notes for Macintosh users
- This instruction manual

Step 1: Connect the display to your computer

Turn off the monitor and computer before connecting.

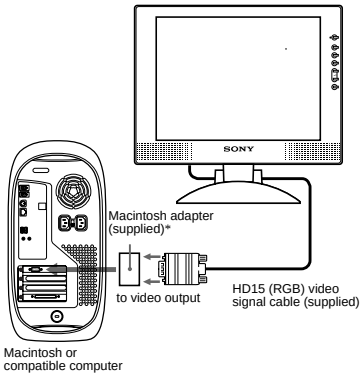
Note
Do not touch the pins of the video signal cable connector as this might bend the pins.

■ Connecting to an IBM PC/AT or compatible computer



■ Connecting to a Macintosh or compatible computer

Use the supplied Macintosh adapter.



* Refer to the supplied "Notes for Macintosh users" for further details.

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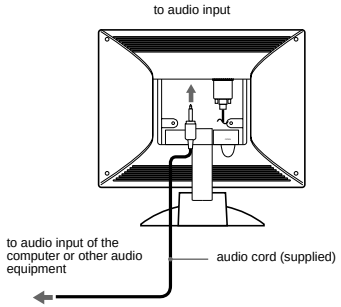
(continued)

Step 2: Connect the audio cord

Open the back cover and turn off the display before connecting.

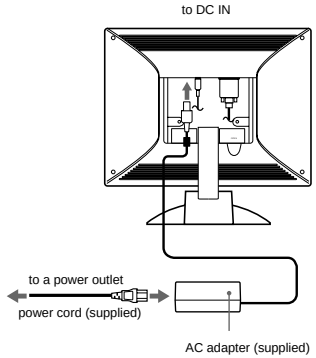
Note

Do not open the back cover more than 90 degrees, otherwise damage may result to the back cover or latch.



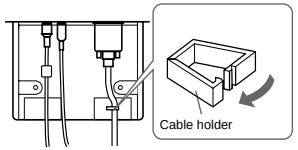
Step 3: Connect the power cord

With the monitor and computer switched off, first connect the AC adapter and power cord to the monitor, then connect it to a power outlet.

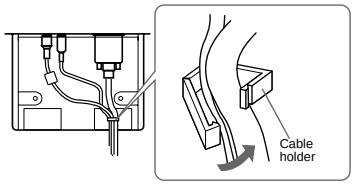


Step 4: Secure the cords and close the back cover

1 Remove the cable holder.



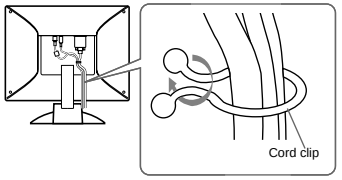
2 Secure the cables and cords with the cable holder.



3 Close the back cover.

Bandle the cables and cords

You can bandle the cables and cords by using the supplied cord clip.



Step 5: Turn on the monitor and computer

1 Press the ⏻ (power) switch.
The indicator of the monitor lights up in green.

2 Turn on the computer.

The installation of your monitor is complete. If necessary, use the monitor's controls to adjust the picture.

If no picture appears on your screen

- Check that the monitor is correctly connected to the computer.
- If NO INPUT SIGNAL appears on the screen, the computer is in the power saving mode. Try pressing any key on the keyboard or moving the mouse.
- If CABLE DISCONNECTED appears on the screen, check that the video input cable is properly connected.
- If OUT OF SCAN RANGE appears on the screen, reconnect the old monitor. Then adjust the computer's graphic board so that the horizontal frequency is between 28 – 64 kHz, and the vertical frequency is between 48 – 75 Hz.

For more information about the on-screen messages, see "Trouble symptoms and remedies" on page 19.

For customers using Windows 95/98/2000

To maximize the potential of your monitor, install the new model information file from the supplied Windows Monitor Information Disk onto your PC.

This monitor complies with the "VESA DDC" Plug & Play standard. If your PC/graphics board complies with DDC, select "Plug & Play Monitor (VESA DDC)" or this monitor's model name as the monitor type in the "Control Panel" of Windows 95/98/2000. If your PC/graphics board has difficulty communicating with this monitor, load the Windows Monitor Information Disk and select this monitor's model name as the monitor type.

For customers using Windows NT4.0

Monitor setup in Windows NT4.0 is different from Windows 95/98/2000 and does not involve the selection of monitor type. Refer to the Windows NT4.0 instruction manual for further details on adjusting the resolution, refresh rate, and number of colors.

Adjusting the monitor's resolution and color number

Adjust the monitor's resolution and color number by referring to your computer's instruction manual. The color number may vary according to your computer or video board. The color palette setting and the actual number of colors are as follows:

- High Color (16 bit) → 65,536 colors
- True Color (24 bit) → about 16.77 million colors

In true color mode (24 bit), speed may be slower.

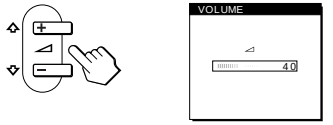
Using the stereo speaker

You can listen to music, sounds, and other audio files using the stereo speaker of your monitor.

Adjusting the volume

Volume adjustments are made using a separate VOLUME menu from the main menu (page 11).

1 Press the ◿ +/– buttons.
The VOLUME menu appears on the screen.



2 Press the ◿ +/– button to adjust the volume.

The menu automatically disappears after about 5 seconds.

Using the headphones jack

You can listen to the audio signals from your computer or other audio equipment using headphones. Connect your headphones to the headphones jack. The speaker turns off when headphones are connected to the headphones jack. Adjust the volume of the headphones using the VOLUME menu.

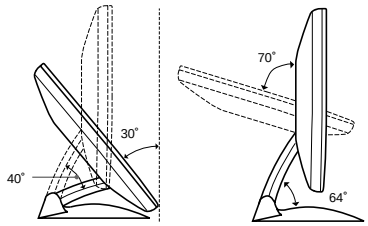
Notes

- You cannot adjust the volume when displaying the main menu on the screen.
- When your monitor is in power saving mode, no sound comes from the speaker.

GB

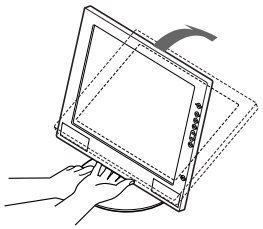
Adjusting the tilt and height

This display can be adjusted within the angles shown below.

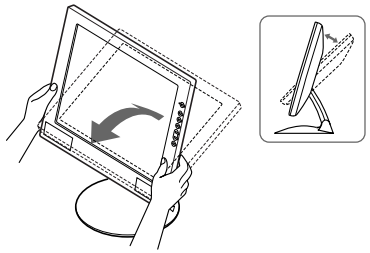


To adjust the angles, follow the procedure of the steps below.

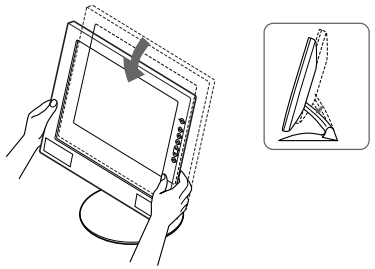
1 Grasp the lower middle part of the display while holding the display stand, then, tilt the LCD panel adequately backward.



2 Grasp the lower sides of the LCD panel, then adjust screen tilt.



3 Grasp the lower sides of the LCD panel, then adjust screen height.



Note

When adjusting the screen tilt and height, proceed slowly and carefully, being sure not to hit the LCD panel against the desk or the base of the display stand.

To use the display comfortably

This display is designed so that you can set it up at a comfortable viewing angle. Adjust the viewing angle of your display according to the height of the desk and chair, and so that light is not reflected from the screen to your eyes.

Customizing Your Monitor

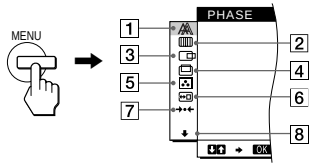
Before making adjustments

Connect the monitor and the computer, and turn them on. Wait for at least 30 minutes before making adjustments for the best result.

You can make numerous adjustments to your monitor using the on-screen menu.

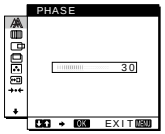
Navigating the menu

Press the MENU button to display the main menu on your screen. See page 12 for more information on using the MENU button.

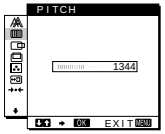


Use the ↑(+)/↓(–) and OK buttons to select one of the following menus. See page 12 for more information on using the ↑(+)/↓(–) and OK buttons.

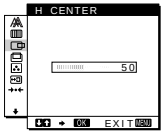
1 PHASE (page 13)
Select the PHASE menu to adjust the phase when the characters or pictures appear fuzzy throughout the entire screen. Adjust the phase after adjusting the pitch.



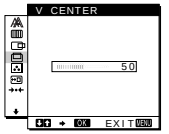
2 PITCH (page 13)
Select the PITCH menu to adjust the pitch when the characters or pictures are unclear in some areas of the screen.



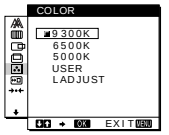
3 H CENTER (page 13)
Select the H CENTER menu to adjust the picture's horizontal centering.



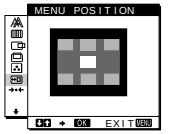
4 V CENTER (page 13)
Select the V CENTER menu to adjust the picture's vertical centering.



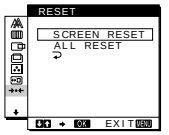
5 COLOR (page 14)
Select the COLOR menu to adjust the color temperature of the picture. This adjusts the tone of the screen.



6 MENU POSITION (page 14)
Select the MENU POSITION to change the on-screen menu position.

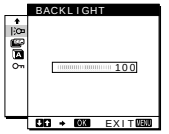


7 RESET (page 15)
Select the RESET menu to reset the adjustments.



8 Option (page 15)
Select ↓ (option) menu to adjust the monitor's options. The options include:

- BACKLIGHT
- POWER SAVE
- LANGUAGE
- MENU LOCK



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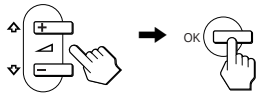
(continued)

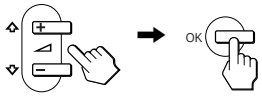
■ Using the MENU, ↑(+)/↓(–), and OK buttons

1 Display the main menu.
Press the MENU button to display the main menu on your screen.

2 Select the menu you want to adjust.
Press the ↑(+)/↓(–) buttons to display the desired menu.
Press the OK button to select the menu item.



3 Adjust the menu.
Press the ↑(+)/↓(–) buttons to make the adjustment, then press the OK button.
When you press the OK button, the setting are stored, then the display returns to the previous menu.



4 Close the menu.
Press the MENU button once to return to normal viewing. If no buttons are pressed, the menu closes automatically after about 30 seconds.

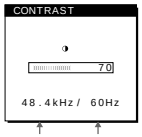
■ Resetting the adjustments

You can reset the adjustments using the RESET menu. See page 15 for more information on resetting the adjustments.

Adjusting the contrast (CONTRAST)

Contrast adjustment is made using a separate CONTRAST menu from the main menu (page 11).

1 Press the ◑ (contrast) button.
The CONTRAST menu appears on the screen.



Horizontal frequency of the current input signal

Vertical frequency of the current input signal

Displaying the current input signal
The horizontal and vertical frequencies of the current input signal are displayed in the CONTRAST and BRIGHTNESS menu.

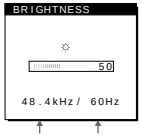
2 Press the ↑(+)/↓(–) buttons to adjust the contrast.

The menu automatically disappears after about 5 seconds.

Adjusting the black level of an image (BRIGHTNESS)

Brightness adjustment is made using a separate BRIGHTNESS menu from the main menu (page 11).

1 Press the ☼ (brightness) button.
The BRIGHTNESS menu appears on the screen.



Horizontal frequency of the current input signal

Vertical frequency of the current input signal

2 Press the ↑(+)/↓(–) buttons to adjust the brightness.

The menu automatically disappears after about 5 seconds.

If the screen is too bright

Adjust the backlight. For more information about adjusting the backlight see “Adjusting the backlight” on page 15.

Note
You can adjust neither contrast nor brightness when displaying the main menu on the screen.

Eliminating flicker or blurring (PHASE/PITCH)

When the monitor receives an input signal, the automatic picture quality adjustment function of this monitor automatically adjusts the picture position, phase, and pitch, and ensures that a clear picture appears on the screen. For more information about this function, see “Automatic picture quality adjustment function” on page 17.
For some input signals, this function may not completely adjust the picture position, phase, and pitch. In this case, you can manually set these adjustments according the following instructions. If you manually set these adjustments, they are stored in memory and automatically recalled whenever the monitor receives the same input signals.
These settings may have to be repeated if you change the input signal after reconnecting your computer.

1 Set the resolution to 1024 × 768 on the computer.

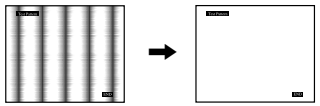
2 Load the Utility Disk.

3 Start the Utility Disk and display the test pattern.
For Windows 95/98/2000
Click [Utility] → [Windows]/[Win Utility.exe].
For Macintosh
Click [Utility] → [Mac]/[Mac Utility].

4 Press the MENU button.
The main menu appears on the screen.

5 Press the ↑(+)/↓(–) buttons to select (PITCH) and press the OK button.
The PITCH menu appears on the screen.

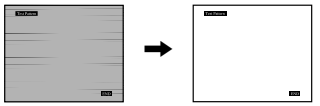
6 Press the ↑(+)/↓(–) buttons until the vertical stripes disappear.
Adjust so that the vertical stripes disappear.



7 Press the OK button.
The main menu appears on the screen.
If horizontal stripes are observed over the entire screen, adjust the phase as the next step.

8 Press the ↑(+)/↓(–) buttons to select (PHASE) and press the OK button.
The PHASE menu appears on the screen.

9 Press the ↑(+)/↓(–) buttons until the horizontal stripes are at a minimum.
Adjust so that the horizontal stripes are at a minimum.



10 Click END on the screen to turn off the test pattern.

To reset the automatic picture quality adjustment
Select SCREEN RESET and activate it using the RESET menu. See page 15 for more information on using the RESET menu.

Adjusting the picture position (H CENTER/V CENTER)

If the picture is not in the center of the screen, adjust the picture’s centering as follows.
These settings may have to be repeated if you change the input signal after reconnecting your computer.

1 Start the Utility Disk and display the test pattern.
Repeat steps 2 and 3 of “Eliminating flicker or blurring (PHASE/PITCH).”

2 Press the MENU button.
The main menu appears on the screen.

3 Press the ↑(+)/↓(–) buttons to select (H CENTER) or (V CENTER) and press the OK button.
The H CENTER or V CENTER menu appears on the screen.

4 Move the picture up, down, left, or right until the frame at the perimeter of the test pattern disappears.
Press the ↑(+)/↓(–) buttons to adjust the picture’s centering using the H CENTER menu for horizontal adjustment, or the V CENTER menu for vertical adjustment.

5 Click END on the screen to turn off the test pattern.

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Adjusting the color temperature (COLOR)

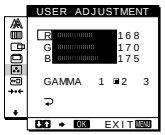
The COLOR settings allow you to adjust the picture's color temperature by changing the color level of the white color field. Colors appear reddish if the temperature is low, and bluish if the temperature is high.
9300K is generally suitable for word processing and other text oriented applications, and 6500K is generally suitable for video images.
You can set the color temperature to 9300K, 6500K, 5000K or user adjustment.

1 Press the MENU button.
The main menu appears on the screen.

2 Press the ↑(+)/↓(–) buttons to select (COLOR) and press the OK button.

3 Press the ↑(+)/↓(–) buttons to select the desired color temperature and press the OK button.
The preset color temperatures are 9300K, 6500K, and 5000K. Since the default setting is 9300K, the whites will change from a bluish hue to a reddish hue as the temperature is lowered to 6500K and 5000K.

4 If necessary, fine tune the color temperature.
First press the ↑(+)/↓(–) buttons to select ADJUST and press the OK button. Then press the ↑(+)/↓(–) buttons to select R (Red) or B (Blue) and press the OK button, and then press the ↑(+)/↓(–) buttons to adjust the color temperature and press the OK button. Since this adjustment changes the color temperature by increasing or decreasing the R and B components with respect to G (green), the G component is fixed.



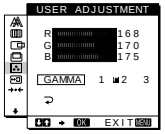
To change the GAMMA setting

You can select the GAMMA setting from [1] - [3]. The highest setting is [3].

1 Press the MENU button.
The main menu appears on the screen.

2 Press the ↑(+)/↓(–) buttons to select (COLOR) and press the OK button.
The COLOR menu appears on the screen.

3 Change the GAMMA setting.
First press the ↑(+)/↓(–) buttons to select ADJUST and press the OK button. Then press the ↑(+)/↓(–) buttons to select GAMMA and press the OK button, and then press the ↑(+)/↓(–) buttons to select [1] -[3] and press the OK button.



If you fine tune the color temperature or change the GAMMA setting, the new setting is stored in memory for USER ADJUSTMENT and automatically recalled whenever USER is selected.

To return to the main menu

Press the ↑(+)/↓(–) buttons to select , then press the OK button.

Changing the menu's position (MENU POSITION)

You can change the menu position if it is blocking an image on the screen.

1 Press the MENU button.
The main menu appears on the screen.

2 Press the ↑(+)/↓(–) buttons to select (MENU POSITION) and press the OK button.

3 Press the ↑(+)/↓(–) buttons to select the desired position and press the OK button.
There are three positions each for the top of the screen and the bottom of the screen, and one for the screen center.

Resetting the adjustments (RESET)

This monitor has the following two reset methods. Use the RESET menu to reset the adjustments.

1 Press the MENU button.
The main menu appears on the screen.

2 Press the ↑(+)/↓(–) buttons to select (RESET) and press the OK button.
Reset the settings according to the following instructions.

Resetting the adjustment data most appropriately for the current input signal

Press the ↑(+)/↓(–) buttons to select SCREEN RESET and press the OK button.
The automatic picture quality adjustment function of this monitor automatically adjusts the picture position, phase, and pitch, to the most appropriate value.
The RESET menu is automatically returned to the main menu after the adjustment data is reset.

Resetting all of the adjustment data

Press the ↑(+)/↓(–) buttons to select ALL RESET and press the OK button.
The RESET menu is automatically returned to the main menu after the adjustment data is reset.

To cancel resetting

Press the ↑(+)/↓(–) buttons to select and press the OK button.
The RESET menu returns to the main menu without resetting the adjustment data.

Additional settings (Option)

You can adjust the following options:
- BACKLIGHT
- POWER SAVE
- LANGUAGE
- MENU LOCK

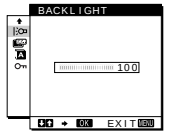
1 Press the MENU button.
The main menu appears on the screen.

2 Press the ↑(+)/↓(–) buttons to select ↓.
The option menu appears on the screen.

3 Press the ↑(+)/↓(–) buttons to select the desired option item and press the OK button.
Adjust the selected option item according to the following instructions.

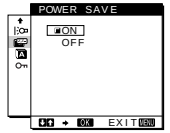
Adjusting the backlight

If the screen is too bright, adjust the backlight.
First press the ↑(+)/↓(–) buttons to select (BACKLIGHT) and press the OK button. Then press the ↑(+)/↓(–) buttons to adjust the desired light level.



Setting up the power saving mode

This monitor has a function which enables it to enter the power save mode automatically according to the power saving settings of the computer. You can prevent the monitor from entering the power saving mode by setting the following option to OFF.
For more information of the power saving mode, see page 17.
First press the ↑(+)/↓(–) buttons to select (POWER SAVE) and press the OK button. Then press the ↑(+)/↓(–) buttons to select either ON or OFF.



(continued)

Selecting the on-screen menu language

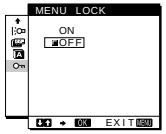
English, German, French, Spanish, Italian and Japanese versions of the on-screen menus are available. The default setting is English.

First press the ↑(+)/↓(–) buttons to select A (LANGUAGE) and press the OK button. Then press the ↑(+)/↓(–) button to select a language and press the OK button.

- ENGLISH
- DEUTSCH: German
- FRANÇAIS: French
- ESPAÑOL: Spanish
- ITALIANO: Italian
- 日本語 : Japanese

Locking the menus and controls

First press the ↑(+)/↓(–) buttons to select O⁻ (MENU LOCK) and press the OK button. Then press the ↑(+)/↓(–) buttons and select ON.



Only the ⏻ (power) switch, and O⁻ (MENU LOCK) of the option menu will operate. If any other items are selected, the O⁻ mark appears on the screen.

To cancel the menu lock

Repeat the procedure above and set and O⁻ (MENU LOCK) to OFF.

Technical Features

Power saving function

This monitor meets the power-saving guidelines set by VESA, ENERGY STAR, and NUTEK. If the monitor is connected to a computer or video graphics board that is DPMS (Display Power Management Signaling) compliant, the monitor will automatically reduce power consumption in three stages as shown below.

Power mode	Power consumption*	⏻ (power) indicator
normal operation	19 W (22 W)	green
active off** (deep sleep)*	1 W (2 W)	orange***
power off	1 W (2 W)	off

* "deep sleep" is the power saving mode defined by the Environmental Protection Agency.

** When your computer enters the "active off" mode, the input signal is cut and NO INPUT SIGNAL appears on the screen. After 20 seconds, the monitor enters the power saving mode.

*** If the horizontal or vertical sync signal is received by the monitor, the power indicator may alternately blink green and orange.

Automatic picture quality adjustment function

When the monitor receives an input signal, it automatically matches the signal to one of the factory preset modes stored in the monitor's memory to provide a high quality picture at the center of the screen. (See Appendix for a list of the factory preset modes.)

For input signals that do not match one of the factory preset modes, the automatic picture quality adjustment function of this monitor automatically adjusts the picture position, phase, and pitch, and ensures that a clear picture appears on the screen for any timing within the monitor's frequency range (horizontal: 28 – 64 kHz, vertical: 48 – 75 Hz).

Consequently, the first time the monitor receives input signals that do not match one of the factory preset modes, the monitor may take a longer time than normal for displaying the picture on the screen. This adjustment data is automatically stored in memory so that next time, the monitor will function in the same way as when the monitor receives the signals that match one of the factory preset modes.

In all modes as above, if the picture is adjusted, the adjustment data is stored as a user mode and automatically recalled whenever the same input signal is received.

Note

While the automatic picture quality adjustment function is activated, only the ⏻ (power) switch will operate.

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Troubleshooting

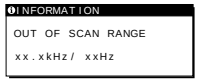
Before contacting technical support, refer to this section.

On-screen messages

If there is something wrong with the input signal, one of the following messages appears on the screen. To solve the problem, see “Trouble symptoms and remedies” on page 19.

If OUT OF SCAN RANGE appears on the screen

This indicates that the input signal is not supported by the monitor’s specifications. Check the following items.



If “xx.x kHz/xx Hz” is displayed

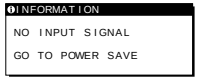
This indicates that either the horizontal or vertical frequency is not supported by the monitor’s specifications.
The figures indicate the horizontal and vertical frequencies of the current input signal. The horizontal frequencies above 100 kHz and the vertical frequencies above 100 Hz are represented by 99.9 kHz and 99 Hz, respectively.

If “RESOLUTION > XGA” is displayed

This indicates that the resolution is not supported by the monitor’s specifications.

If NO INPUT SIGNAL appears on the screen

This indicates that no signal is input.

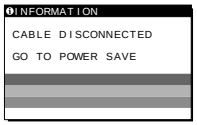


GO TO POWER SAVE

The monitor will enter the power saving mode after about 5 seconds from the message is displayed.

If CABLE DISCONNECTED appears on the screen

This indicates that the video signal cable has been disconnected from the currently selected connector.



GO TO POWER SAVE

The monitor will enter the power saving mode after about 5 seconds from the message is displayed.

Trouble symptoms and remedies

If a problem is caused by the connected computer or other equipment, please refer to the connected equipment’s instruction manual. Use the self-diagnosis function (page 21) if the following recommendations do not resolve the problem.

Symptom	Check these items
No picture	
If the ⏻ (power) indicator is not lit, or if the ⏻ (power) indicator will not light up when the ⏻ (power) switch is pressed	• Check that the power cord is properly connected. • Check that the ⏻ (power) switch is in the “on” position.
If the ⏻ (power) indicator is green or flashing orange	• Use the self-diagnostics function (page 21).
If CABLE DISCONNECTED appears on the screen	• Check that the video signal cable is properly connected and all plugs are firmly seated in their sockets (page 7). • Check that the video input connector’s pins are not bent or pushed in. • A non-supplied video signal cable is connected. If you connect a non-supplied video signal cable, CABLE DISCONNECTED may appear on the screen before entering the power saving mode. This is not a malfunction.
If NO INPUT SIGNAL appears on the screen, or the ⏻ (power) indicator is either orange or alternating between green and orange	• Check that the video signal cable is properly connected and all plugs are firmly seated in their sockets (page 7). • Check that the video input connector’s pins are not bent or pushed in. ■**Problems caused by the connected computer or other equipment** • The computer is in the power saving mode. Try pressing any key on the keyboard or moving the mouse. • Check that your graphic board is attached to the computer properly. • Check that the computer’s power is “on.”
If OUT OF SCAN RANGE appears on the screen	■**Problems caused by the connected computer or other equipment** • Check that the video frequency range is within that specified for the monitor. If you replaced an old monitor with this monitor, reconnect the old monitor and adjust the frequency range to the following: Horizontal: 28 – 64 kHz, Vertical frequency: 48 – 75 Hz
If using Windows 95/98/2000	• If you replaced an old monitor with this monitor, reconnect the old monitor and do the following. Select “SONY” from the “Manufactures” list and select “SDM-M51” from the “Models” list in the Windows 95/98/2000 device selection screen. If “SDM-M51” does not appear in the “Models” list, try “Plug & Play” or install the newest information of the Sony Computer Display from the Windows Monitor Information Disk (page 9).
If using a Macintosh system	• When connecting to a Power Mac G3/G4 that has 3 rows of pins, check that the supplied Macintosh adapter and the video signal cable are properly connected (page 7). • If you connect to the other version of Macintosh series computer that has 2 rows of pins, you will need a different adapter (not supplied).
Picture flickers, bounces, oscillates, or is scrambled	• Adjust the pitch and phase (page 13). • Isolate and eliminate any potential sources of electric or magnetic fields such as other monitors, laser printers, electric fans, fluorescent lighting, or televisions. • Move the monitor away from power lines or place a magnetic shield near the monitor. • Try plugging the monitor into a different AC outlet, preferably on a different circuit. • Change the orientation of the display. ■**Problems caused by the connected computer or other equipment** • Check your graphics board manual for the proper monitor setting. • Confirm that the graphics mode (VESA, Macintosh 19" Color, etc.) and the frequency of the input signal are supported by this monitor (Appendix). Even if the frequency is within the proper range, some graphic boards may have a sync pulse that is too narrow for the monitor to sync correctly. • Adjust the computer’s refresh rate (vertical frequency) to obtain the best possible picture.

(continued)

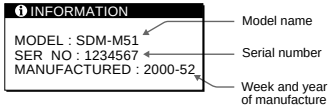
GB

Symptom	Check these items
Picture is fuzzy	• Adjust the brightness and contrast (page 12). • Adjust the pitch and phase (page 13). **■Problems caused by the connected computer or other equipment** • Set the resolution to XGA (1024 x 768) on your computer.
Picture is ghosting	• Eliminate the use of video cable extensions and/or video switch boxes. • Check that all plugs are firmly seated in their sockets.
Picture is not centered or sized properly	• Adjust the pitch and phase (page 13). • Adjust the picture position (page 13). Note that some video modes do not fill the screen to the edges.
The picture is dark	• Adjust the brightness (page 12). • Adjust the backlight (page 12). • It takes a few minutes for the display to become bright after turning on the monitor.
Wavy or elliptical pattern (moire) is visible	• Adjust the pitch and phase (page 13).
Color is not uniform	• Adjust the pitch and phase (page 13).
White does not look white	• Adjust the color temperature (page 14).
Monitor buttons do not operate (🔑 appears on the screen)	• If the menu lock is set to ON, set it to OFF (page 16).
The monitor turns off after a while	• Set the power saving function to OFF (page 15). **■Problems caused by the connected computer or other equipment** • Set the computer's power saving setting to off.

Displaying this monitor's name, serial number, and date of manufacture.

While the monitor is receiving a video signal, press and hold the MENU button for more than 5 seconds.
The monitor's information box appears.

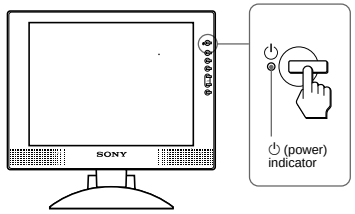
Example



If any problem persists, call your authorized Sony dealer and give the following information:
- Model name: SDM-M51
- Serial number
- Name and specifications of your computer and graphics board.

Self-diagnosis function

This monitor is equipped with a self-diagnosis function. If there is a problem with your monitor or computer(s), the screen will go blank and the ⏻ (power) indicator will either light up green or flash orange. If the ⏻ (power) indicator is lit in orange, the computer is in power saving mode. Try pressing any key on the keyboard or moving the mouse.



If the ⏻ (power) indicator is green

1 Turn off the ⏻ (POWER) switch and disconnect the video signal cables from the monitor.

2 Turn the monitor on by pressing the ⏻ (POWER) switch.

If all four color bars appear (white, red, green, blue), the monitor is working properly. Reconnect the video input cables and check the condition of your computer(s).

If the color bars do not appear, there is a potential monitor failure. Inform your authorized Sony dealer of the monitor's condition.

If the ⏻ (power) indicator is flashing orange

Press the ⏻ (power) switch twice to turn the monitor off and then on.
If the ⏻ (power) indicator lights up green, the monitor is working properly.

If the ⏻ (power) indicator is still flashing, there is a potential monitor failure. Count the number of seconds between orange flashes of the ⏻ (power) indicator and inform your authorized Sony dealer of the monitor's condition. Be sure to note the model name and serial number of your monitor. Also note the make and model of your computer and graphic board.

Specifications

LCD panel	Panel type: a-Si TFT Active Matrix Picture size: 15.1 inch
Input signal format	RGB operating frequency* Horizontal: 28 – 64 kHz Vertical: 48 – 75 Hz
Resolution	Horizontal: Max.1024 dots Vertical: Max.768 lines
Input signal levels	RGB video signal 0.7 Vp-p, 75 Ω, positive SYNC signal TTL level, 2.2 kΩ, positive or negative (Separate horizontal and vertical, or composite sync) 0.3 Vp-p, 75Ω, negative (Sync on green)
Audio output	1 W × 2
Headphones jack	Stereo minijack Accepts impedance of 16 – 48 Ω
AUDIO IN jack	Stereo minijack Accepts impedance of 47 kΩ Accepts level 0.5 Vrms
Power requirements	100 – 240 V, 50 – 60 Hz, 0.4 – 0.2 A
DC input	DC 18 V (supplied AC adapter)
Power consumption	Max. 19 W Max. 22 W (including AC adapter)
Operating temperature	5 – 35 °C
Dimensions (width/height/depth)	Display (upright): Approx. 387 × 345 × 180 mm (15 1/4 × 13 5/8 × 7 1/8 inches) (with stand) Approx. 387 × 296 × 48 mm (15 1/4 × 11 3/4 × 1 15/16 inches) (without stand)
Mass	Approx. 4.6 kg (10 lb 14 oz) (with stand)
Plug & Play	DDC1/DDC2B/DDC2Bi
Accessories	See page 7.

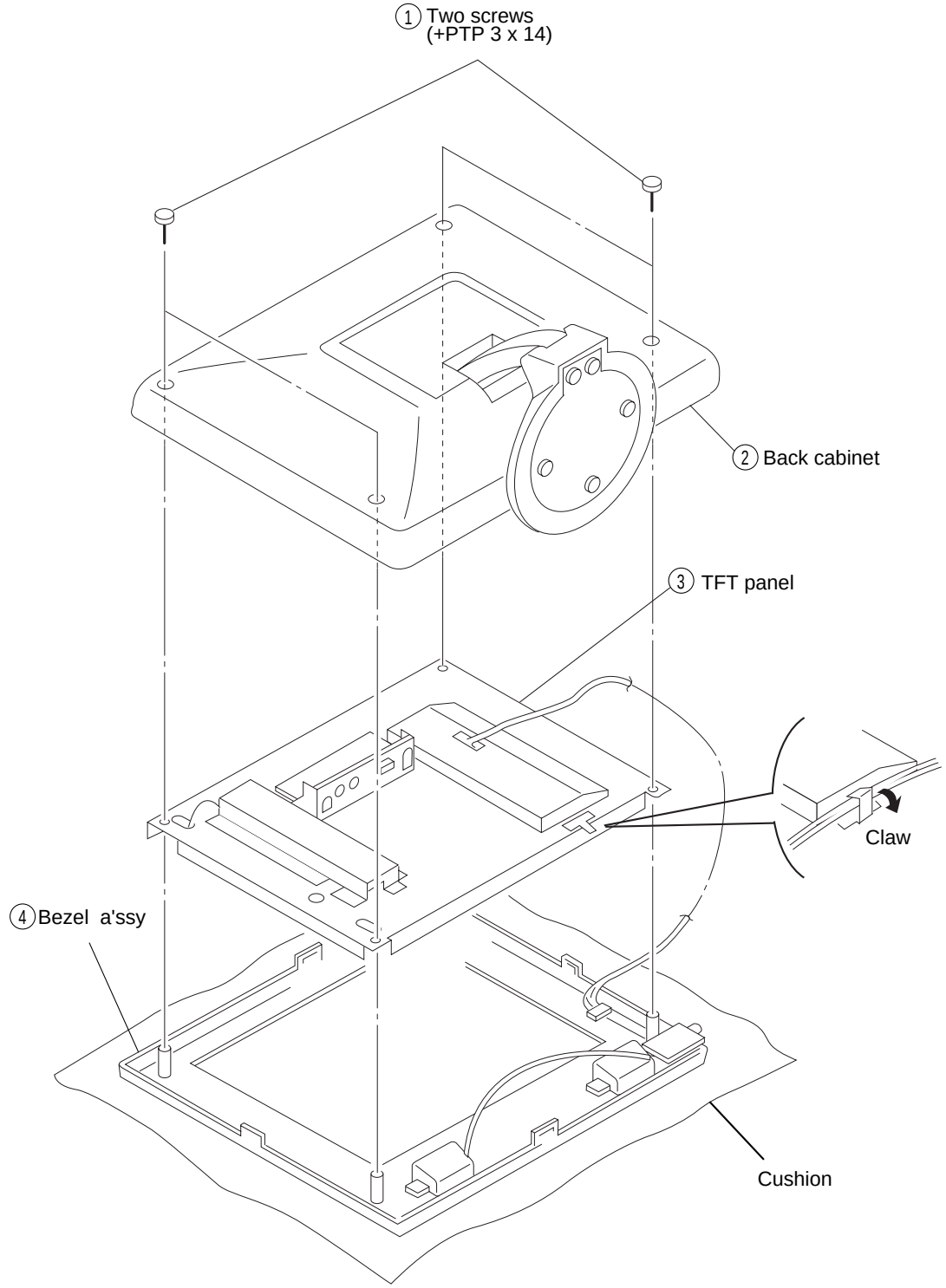
* Recommended horizontal and vertical timing condition
- Horizontal sync width duty should be more than 4.8% of total horizontal time or 0.8 µs, whichever is larger.
- Horizontal blanking width should be more than 2.5 µsec.
- Vertical blanking width should be more than 450 µsec.

Design and specifications are subject to change without notice.

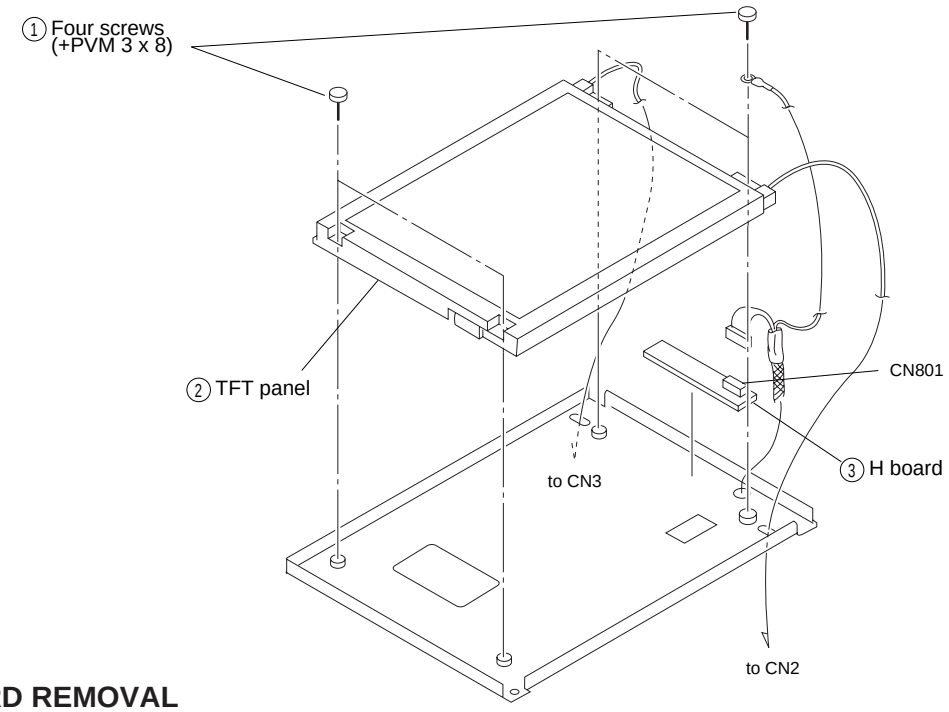
GB

SECTION 2
DISASSEMBLY

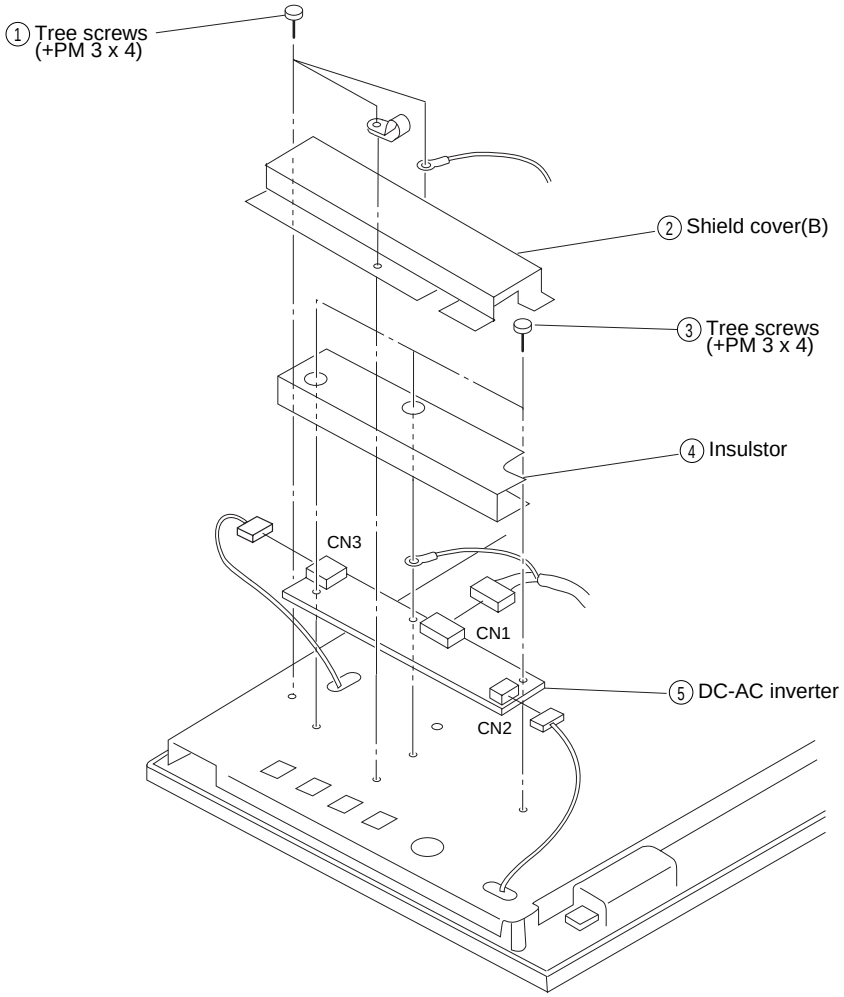
2-1. BEZLE ASSY AND BACK CABINET REMOVAL



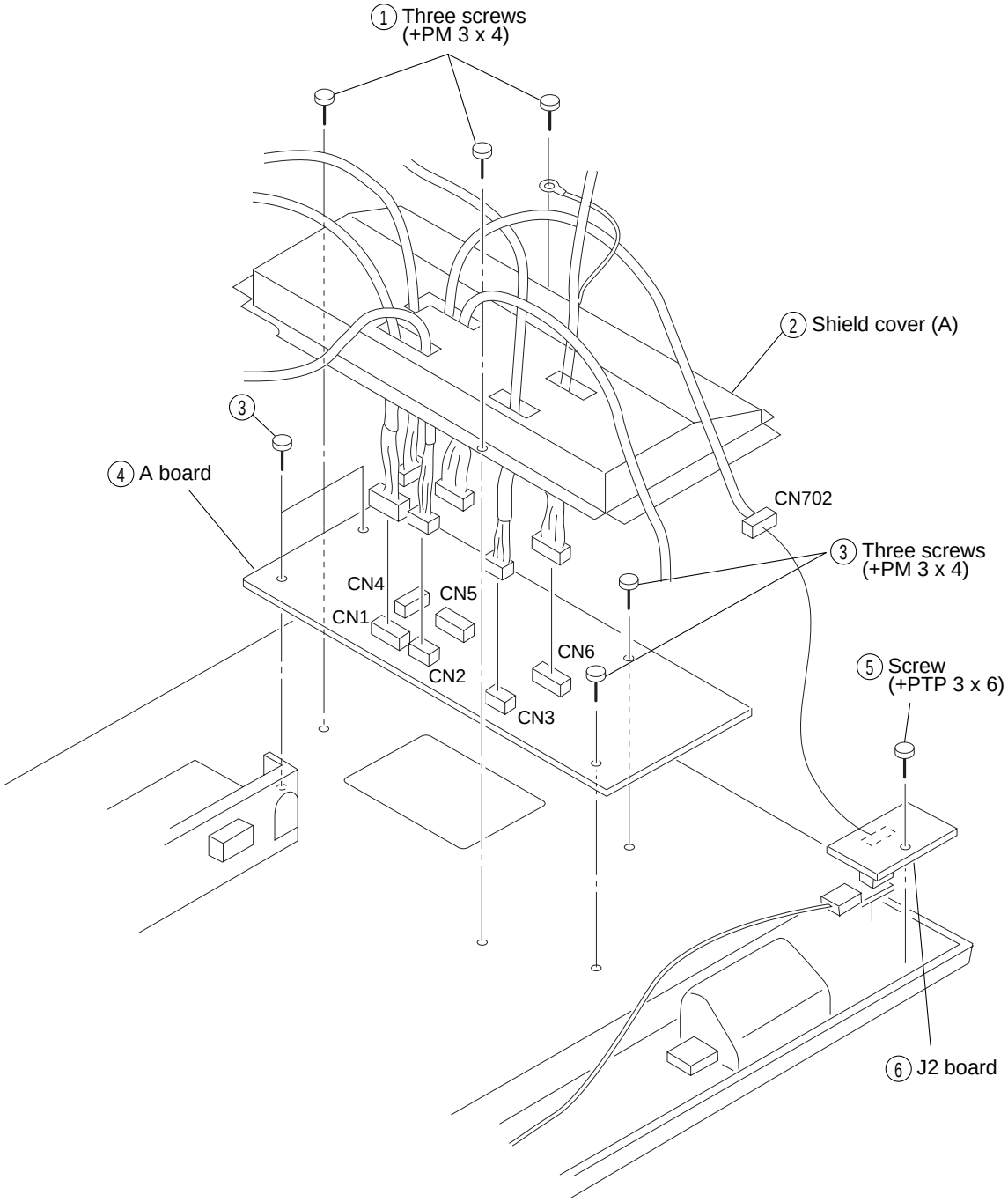
2-2. TFT PANEL AND H BOARD REMOVAL



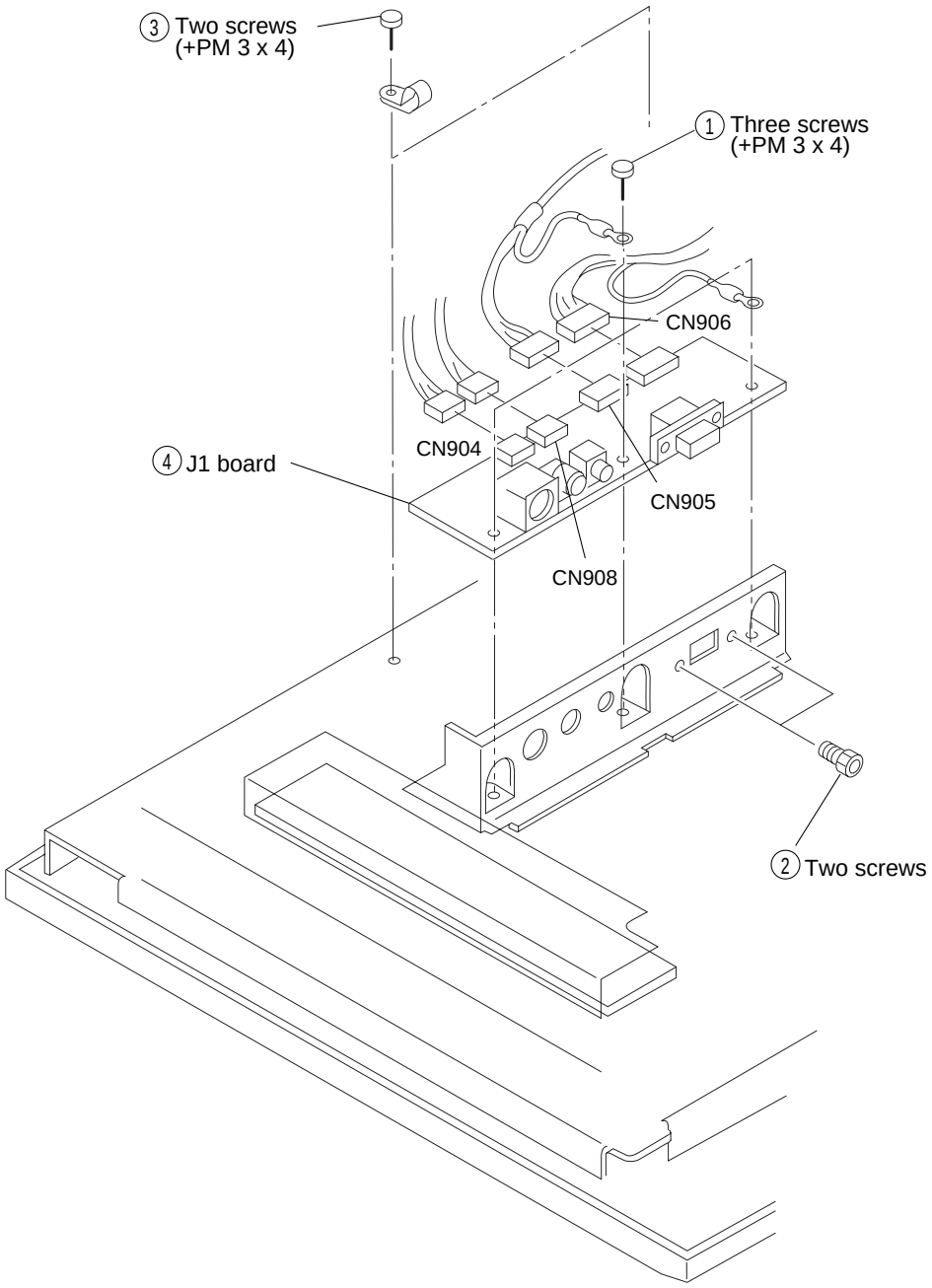
2-3. JI BOARD REMOVAL



2-4. A BOARD AND J2 BOARD REMOVAL



2-5. J1 BOARD REMOVAL



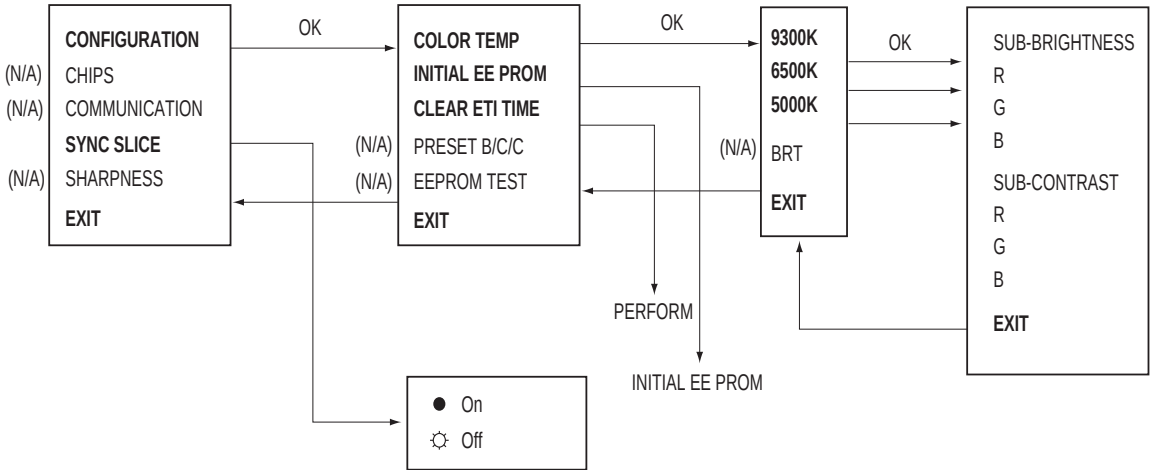
SECTION 3
ADJUSTMENTS

3-1. FUNCTIONAL ALIGINMENT (1)

- **Procedures of how to go to service mode.**

1. Hold "+" and "-" key power on, SDM-M51 goes into service mode.
2. Press "MENU" key-----ODS display.
3. Press "-" key to go to second page's late icon.
4. Press "OK" key----service menu display.
5. Select one of features.
6. Press "MENU" key to exit OSD.
7. Power OFF then ON again, monitor go to normal mode.

If you would like to enter service mode again, performing the above procedures cycle.



Note

1. N/A means "Not applied".
2. This service menu only provides both Configuration & Sync slice fuctions.
   This other were used for design engineering. There is no guarantee of using those N/A functions.

3-2. FUNCTIONAL ALIGINMENT (2)

This paper documents the functional alignment (Used Color meter) procedure of Sony LCD monitor SDM-M51.

- **Equipment**

Computer:	PC workstation with Wndows 95 installed PS/2 mouse is required
Software:	Capetronic engineering alignment software tool
Color meter:	Option
Signal generator:	Option
Cable:	Special RS232 interface cable

- **Setup**

1. Copy ECS software <ALIGN.EXE> into a new PC directory.
2. Prepare timing and pattern data for signal generator according to Sony's timing specifications.
3. Prepare timing files for <ALIGN.EXE>.
4. Connect monitor interface cable between flat panel monitor and PC com port.
5. Connect monitor video cable to signal generator.
6. Put Topcon 50cm from the this monitor; Point it perpendicularly at the center of the display; Achieve the best focus throught the eyepiece.
7. Enclose the this monitor and Topcon in a light-shield chamber.
8. Set up[SERVICE MODE]the this monitor and click as 'RS232C' by[COMUNICATION] of <SERVICE MENU>.

- **Download**

In order to enhance productivity, a software utility is provided to download default data to LCD monitor. The default data includes color balance data and geometry timing data.

- **Operation**

1. Execute software <ALIGN.EXE>.
2. Click on 'Setup' menu.
3. Select 'Monitor' type as 'Sony SDM-M51'.
4. Select 'COM PORT' according to hardware connection.
5. Click <OK> to save the new setup configuration.
6. Quit this application and Re-enter to make the new settings effective.

- **On Screen Adjustment**

1. Click on the 'Monitor' icon; an virtual monitor panel would show up.
2. On entry, the software tires to establish a communication link with the monitor. The monitor internal DACs are read and shown on screen sliders. A 'CONNECT' icon would show up on the lower left corner of the dialog screen.
3. An error message would pop up should communication fail. A 'BREAK' icon would show up on the dialog screen. If this happens, check the hardware setup, communication cable, and the connection.

- **Warm up time**

Allow 30 minutes warm up time before doing any adjustment.

- **Color Adjustment**

1. 9300K color adjustment
   --Center adjustment--
   a. Click 'Color Temperature' as '9300'.
   b. Apply 40% IRE white video field, primary mode.
   c. Make sure 'backlight' register data is 0 (100%).
   d. Click 'Refresh' .
   Refer to table 1 for default data for color adjustment.
   e. Adjust 'sub_brt_R' and 'sub_brt_B' to achieve color temperature. Refer to table 2 for specifications.
   f. Click 'Save this color' for a 9300K color save.

2. 5000K color adjustment
   a. Click 'Color Temperature' as '5000'
   b. Repeat alignment procedure as 9300 steps b - f.

3. 6500K color adjustment
   a. Click 'Color Temperature' as '6500'
   b. Repeat alignment procedure as 9300 steps b - f.

- **Geometry Adjustment**

1. Connect the personal computer which has alignment data.
2. Click 'Refresh' (inside Geometry Register Box).
3. Adjust 'Pitch' for optinum screen performance.
4. Adjust 'Phase' for optinum screen performance.
5. Adjust 'H position' to make the screen center horizontally.
6. Adjust 'V position' to make the screen center vertically.
7. Repeat steps 3-6 for best pictre performance.
8. Click 'Save Geomtory' to perform a user timing mode save.
9. Repeat step 1-7 for each of the user preset timings.

Table 1: Default data for color adjustment

Color	9300K	6500K	5000K
Brightness (G)	128	128	128
Contrast (G)	75	75	75
Sub-Brt-R	152	180	192
Sub-Brt-B	162	154	122
Sub-Brt-G	140	140	140
Sub-Cont-R	75	75	75
Sub-Cont-B	75	75	75
Sub-Cont-G	75	75	75

Table 2: Specifications for Color adjustment

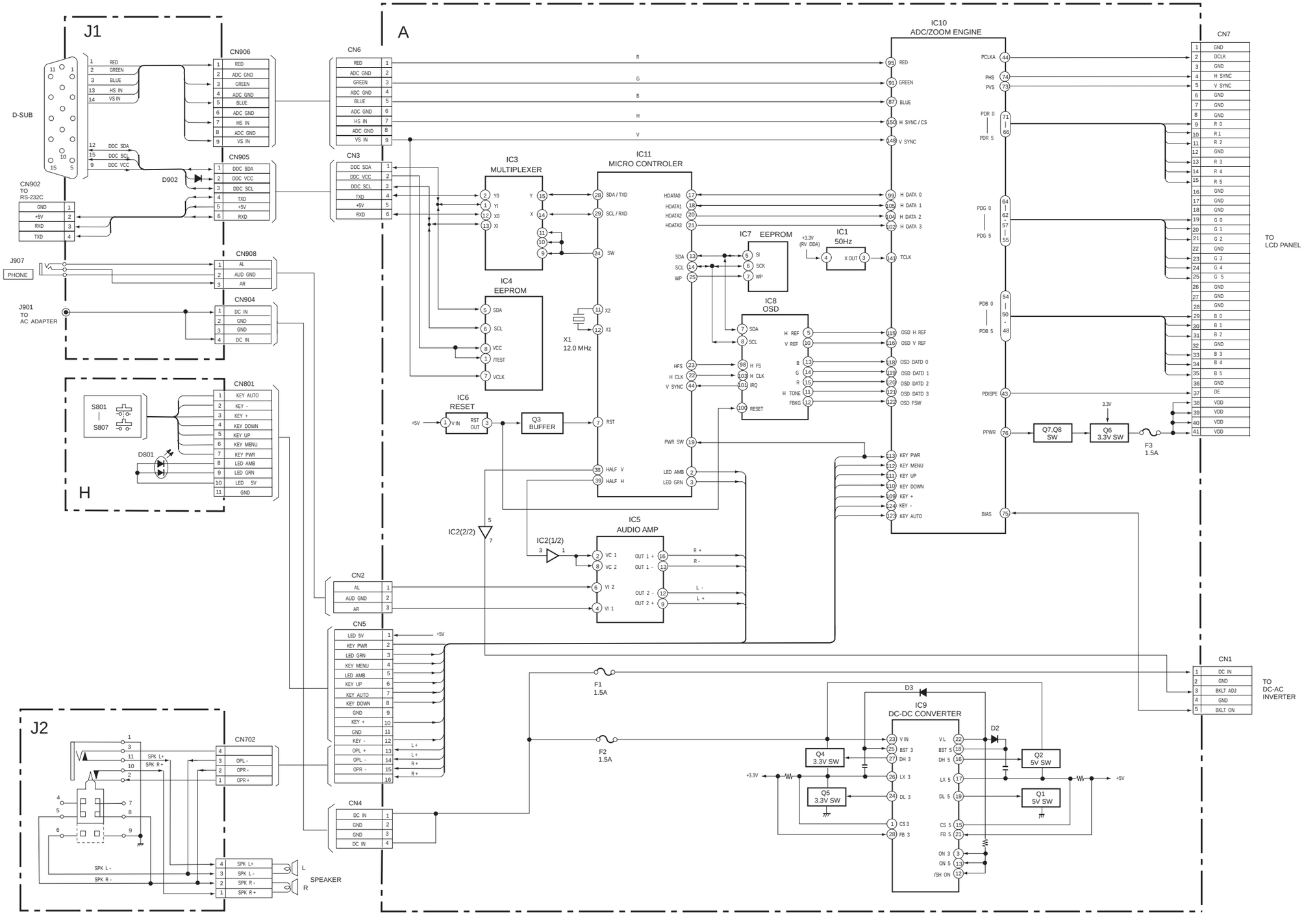
Color	x	y	Y (40% IRE)
9300	283	298	10
6500	314	328	10
5000	345	358	10
Tole	10	10	3

Y: Luminance measurements are in cd/m^2

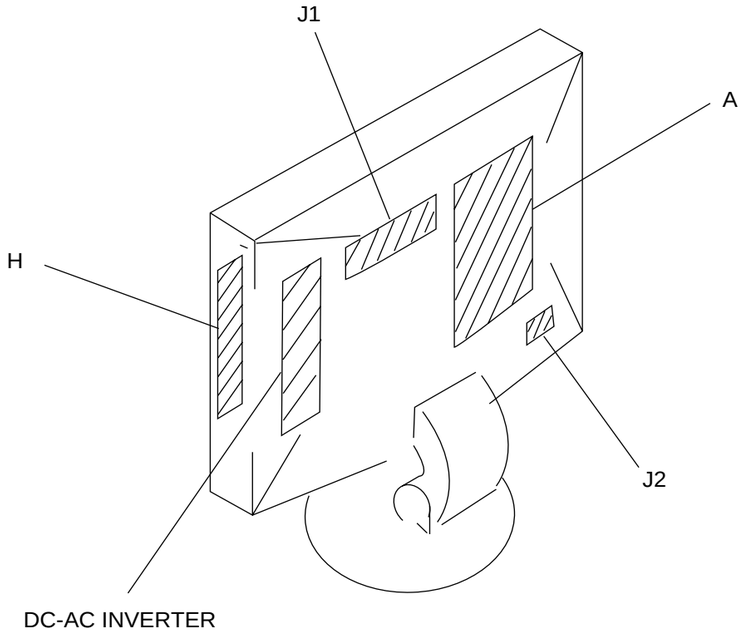
MEMO

SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAMS



4-2. CIRCUIT BOARDS LOCATION



4-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in µF unless otherwise noted. (pF: µµF) Capacitors without voltage indication are all 50 V.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

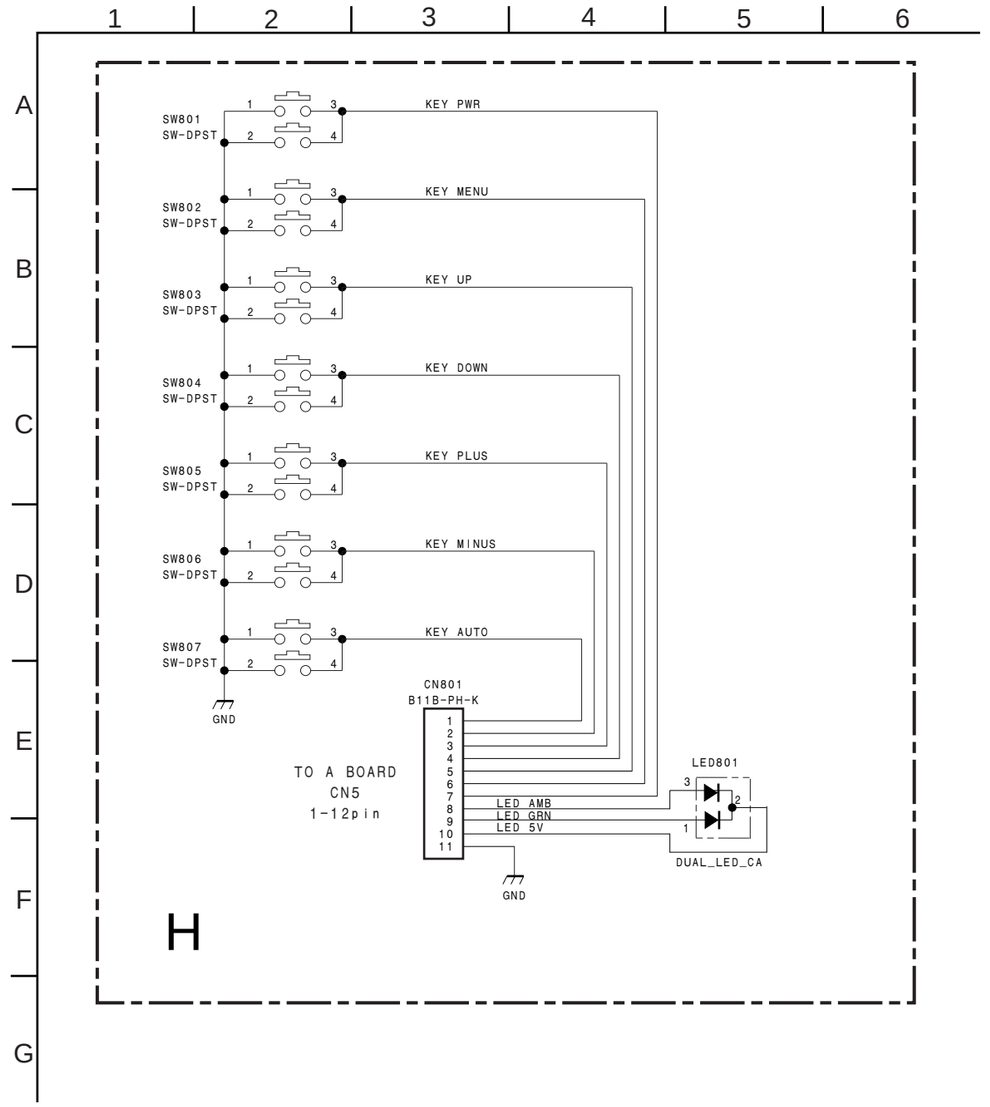
Pitch: 5 mm Rating electrical power 1/4 W (CHIP : 1/10 W)

- All resistors are in ohms.
- : nonflammable resistor.
- : fusible resistor.
- △ : internal component.
- : panel designation, and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊥ : earth-ground.
- ⏚ : earth-chassis.
- All voltages are in V.
- Readings are taken with a 10 M digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
- ∗ : Can not be measured.
- Circled numbers are waveform references.
- ▬▬ : B + bus.
- ▬ ▬ ▬ : B – bus.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés per un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

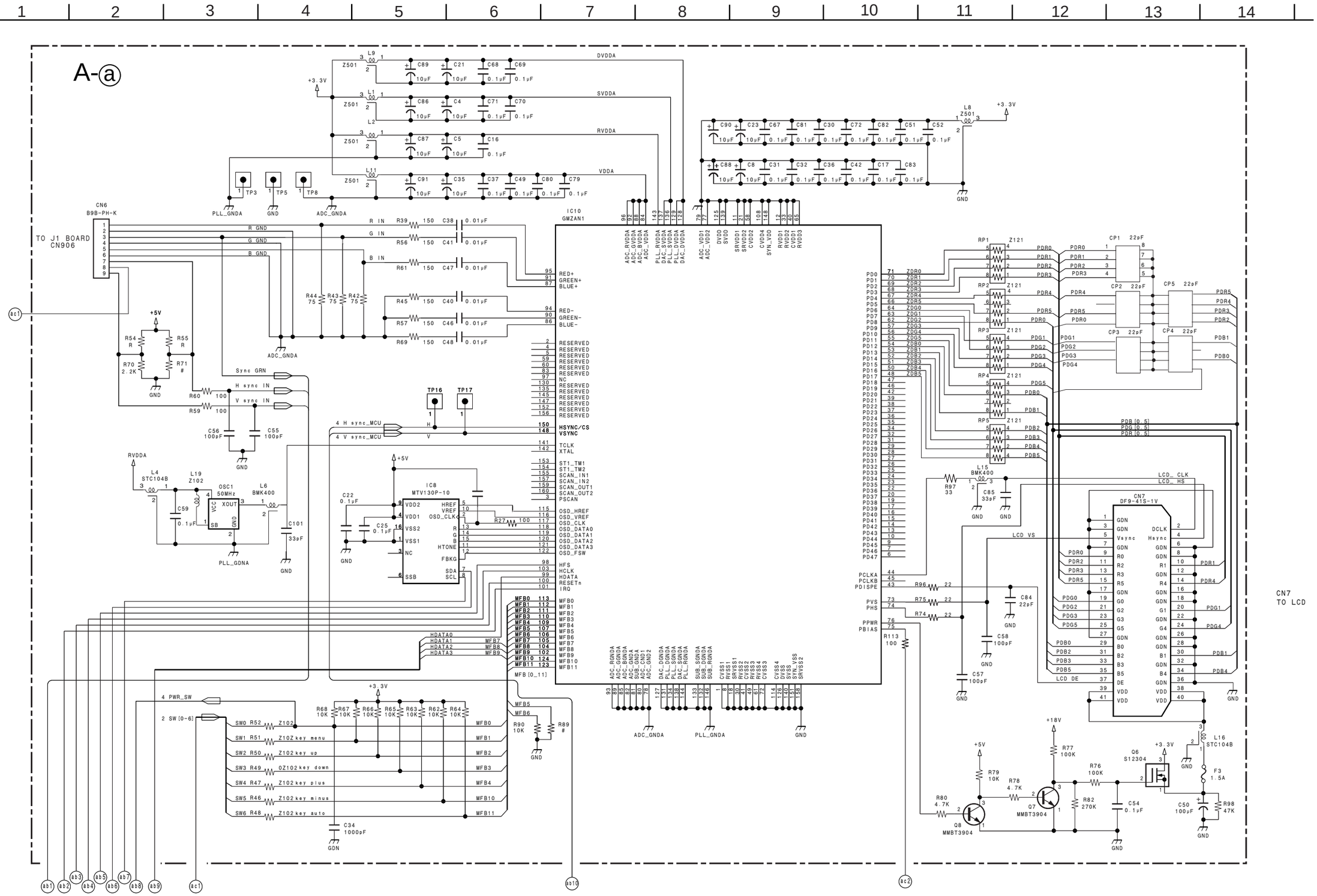
(1) Schematic Diagram of H Board

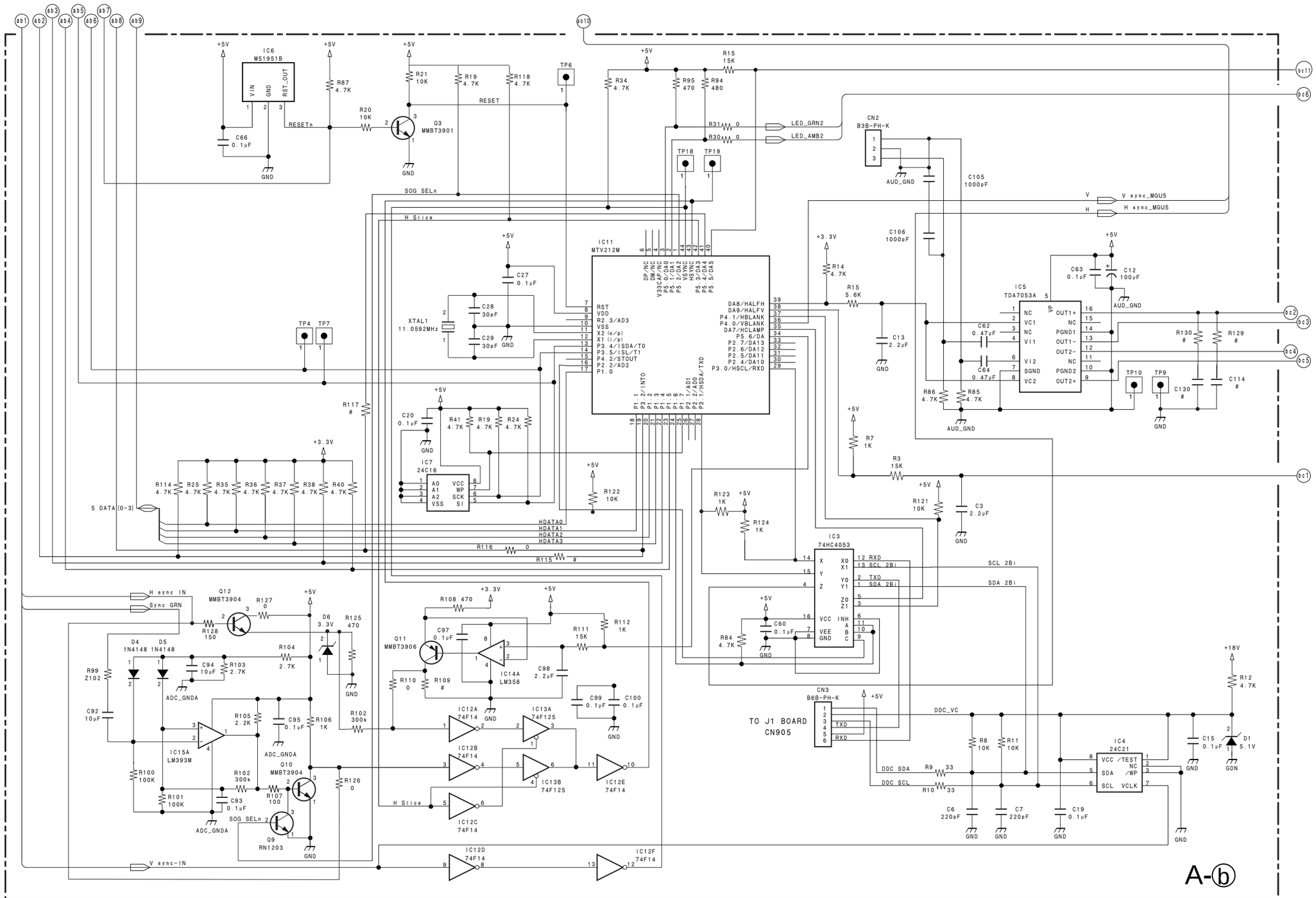


— H BOARD (Conductor Side) —

(2) Schematic Diagram of A(ⓐ - ⓒ) Board

A-ⓐ



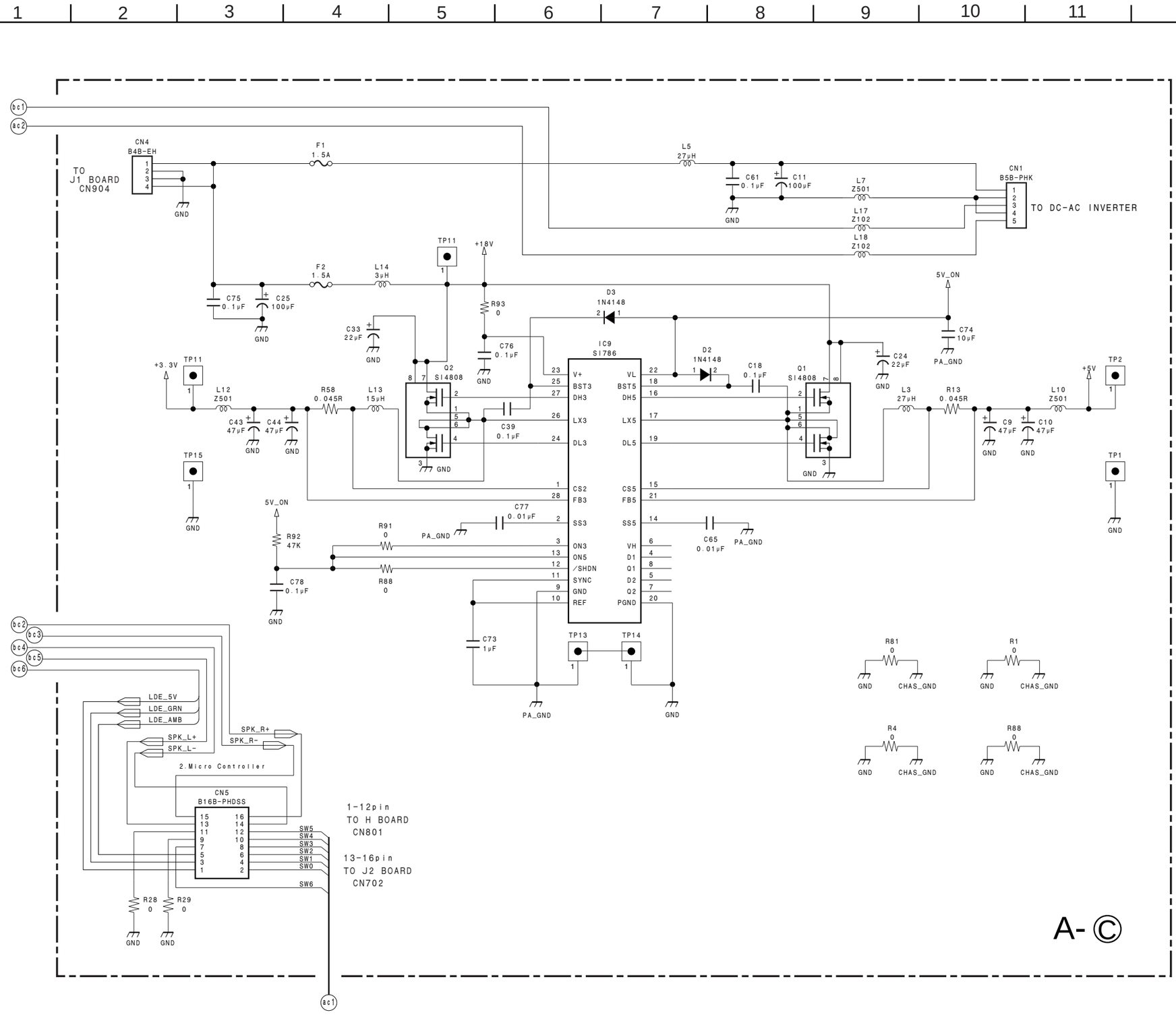


Schematic diagram

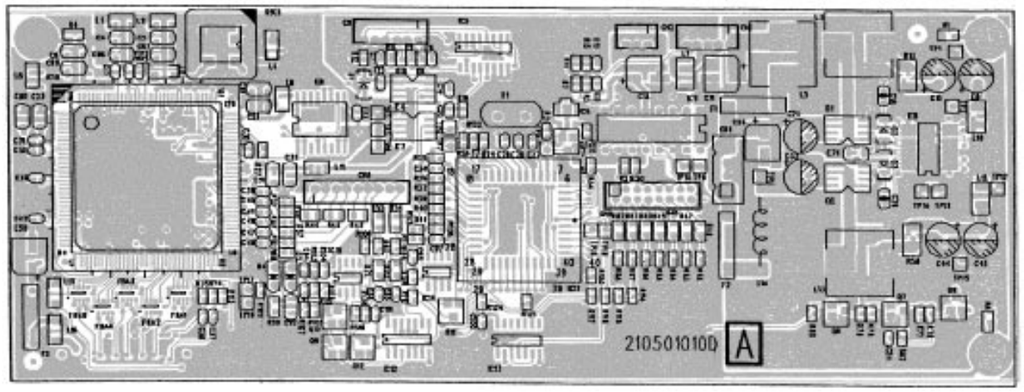
← A - ⓐ board

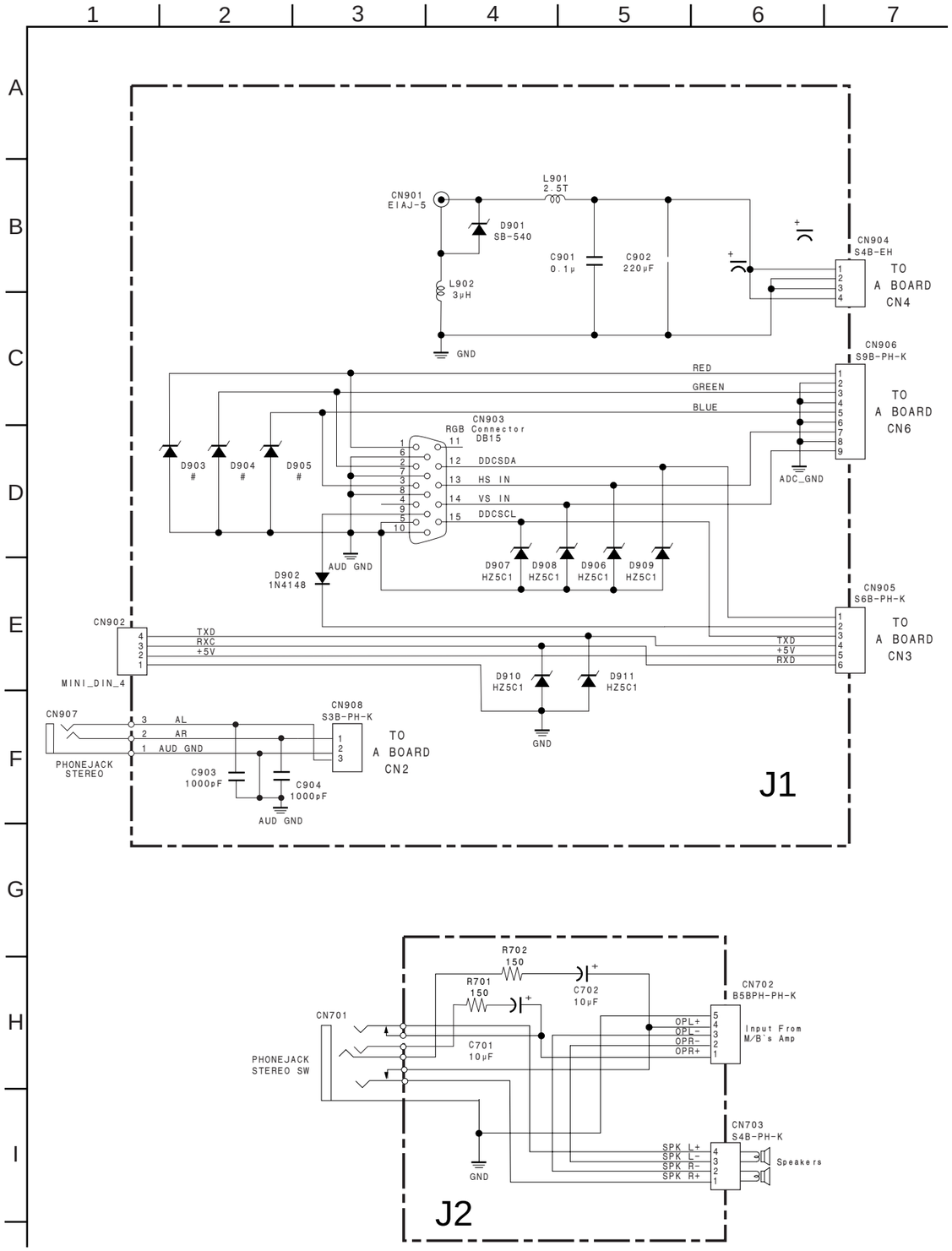
Schematic diagram

A - ⓑ board →


TO J1 BOARD CN904
CN4 B4B-EH
F1 1.5A
L5 27μH
C61 0.1μF
C11 100μF
L7 Z501
L17 Z102
L18 Z102
CN1 B5B-PHK
TO DC-AC INVERTER
TP11
+18V
F2 1.5A
L14 3μH
C75 0.1μF
C25 100μF
C33 22μF
R93 0
C76 0.1μF
D3 1N4148
5V_ON
C74 10μF
PA_GND
IC9 SI786
D2 1N4148
C18 0.1μF
Q1 SI4808
C24 22μF
Q2 SI4808
C39 0.1μF
+3.3V
L12 Z501
R58 0.045R
L13 15μH
C43 47μF
C44 47μF
L3 27μH
R13 0.045R
C9 47μF
C10 47μF
L10 Z501
+5V
TP2
TP15
TP1
R92 47K
R91 0
C77 0.01μF
C65 0.01μF
R88 0
C78 0.1μF
C73 1μF
TP13
TP14
R81 0
R1 0
R4 0
R88 0
LDE_5V
LDE_GRN
LDE_AMB
SPK_L+
SPK_L-
SPK_R+
SPK_R-
2.Micro Controller
CN5 B16B-PHDSS
SW5
SW4
SW3
SW2
SW1
SW0
SW6
R28 0
R29 0
1-12pin TO H BOARD CN801
13-16pin TO J2 BOARD CN702
GND
PA_GND
CHAS_GND
A-©

— A BOARD (Conductor Side) —





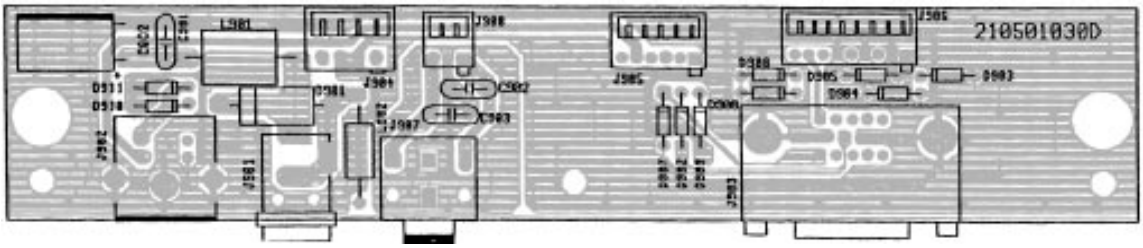
Schematic diagram

◀ A - ⓒ board

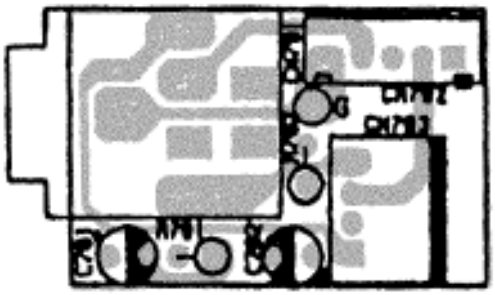
Schematic diagram

J1 J2 board ▶

— J1 BOARD (Conductor Side) —

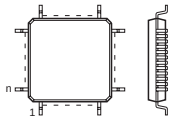


— J2 BOARD (Conductor Side) —



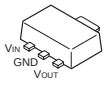
4-4. SEMICONDUCTORS

GMZAN1

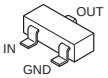


TOP VIEW
160 pin QFP

M5195BML

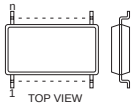


DTC124EA-T106



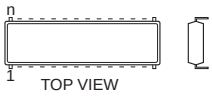
RLS-4148
RLZ5.1B

M24C16-MN6T
LM358D
LM393D
24LC21AT/SN



8 pin SOP

TDA7053A

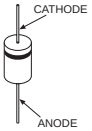


16 pin DIP

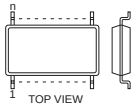
SI4808DY

8 pin CHIP

SB540

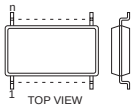


MC74F14M
MC74F125M



14pin SOP

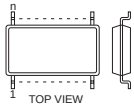
SI786LG-T1



28 pin SOP

SI2304DS-T
SST3904T
SST3906T

MC74HC4053F
MTV130



16 pin SOP

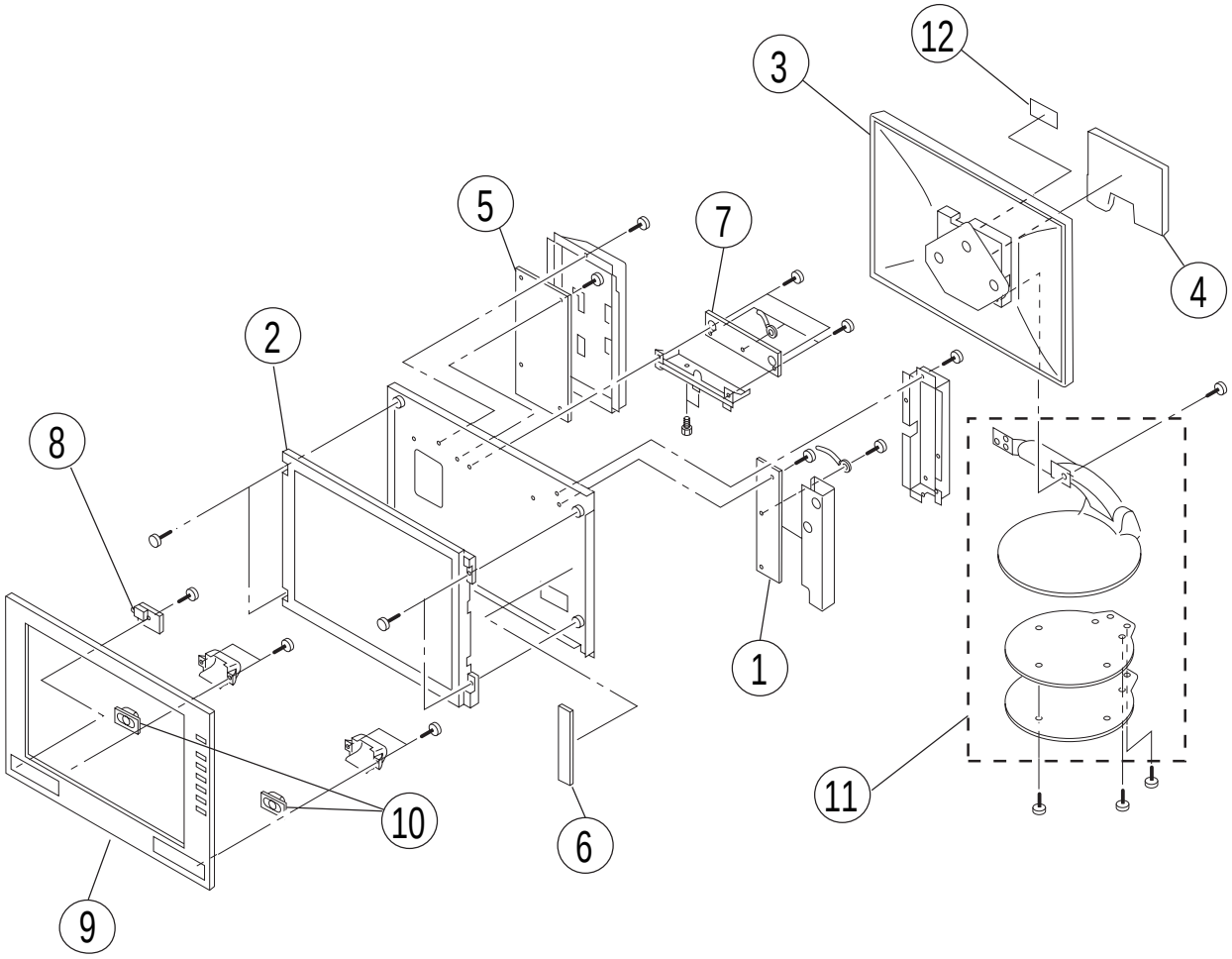
SECTION 5
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. CHASSIS

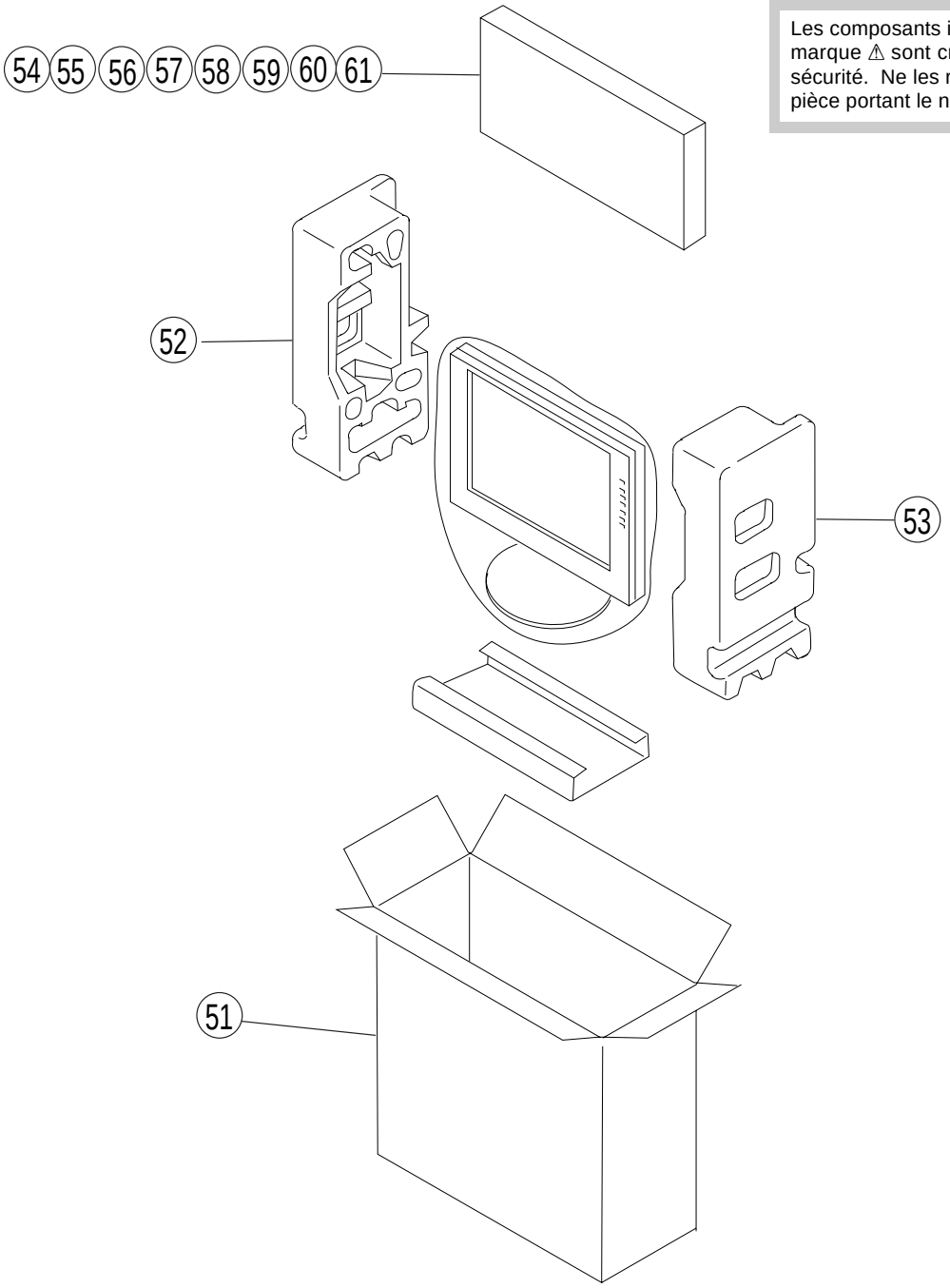


REF.NO.	PART NO.	DESCRIPTION	REMARK
1	1-476-422-11	INVERTER, DC-AC	241-SM15011
2	1-803-808-11	PANEL, LCD	245-151LG01
3		CABINET, BACK ASSY	422-S-0305010
4	4-079-642-01	COVER, REAR	422-0145010
5	A-1272-202-A	A MOUNT	209-5010010
6	A-1372-905-A	H MOUNT	209-5010030
7	A-1388-293-A	J1 MOUNT	209-5010020
8	A-1388-294-A	J2 MOUNT	209-5010040
9	X-4038-369-1	BEZEL ASSY	422-S-0105010
10	1-529-902-11	SPEAKER (20X40MM)	KSI40X20
11	X-4038-370-1	STAND ASSY	422-S-0205010
12	* 4-079-418-11	LABEL, INFORMATION	6100605011

5-2. PACKING MATERIALS

The components identified by mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



REF.NO.	PART NO.	DESCRIPTION	REMARK
51	*4-079-078-01	INDIVIDUAL CARTON	601-9115010
52	4-079-619-01	CUSHION (L)	404-9135010
53	4-079-620-01	CUSHION (R)	404-9145010
54	1-476-397-11	ADAPTOR, AC	201-6018010
55	1-757-371-11	CABLE ASSY (HD15X2)	186-5010001
56	1-757-372-11	CORD, CONNECTION (WITH PLUG)	1865010002
57	1-772-979-11	DISK, INFORMATION (CD-ROM)	617-0105010
58	⚠1-765-719-21	CORD SET, POWER (AEP)	
58	⚠1-765-720-21	CORD SET, POWER (U/C)	
59	1-778-967-21	ADAPTOR, CONVERSION (U/C)	
60	4-079-344-11	MANUAL, INSTRUCTION	6120105011
61	⚠1-792-179-11	CONNECTOR, D SUB (15P CHANGER) (AEP)	204-TRYG301

SECTION 6
ELECTRICAL PARTS LIST

A

NOTE:

The components identified by mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS
  MF : µF
- COILS
  UH : µH

REF.NO.	PART NO.	DESCRIPTION			REMARK
		A MOUNT			
		**********			
		<CAPACITOR>			
C003	1-164-505-11	CERAMIC CHIP	2.2UF	16V	122-CY225Z16TX
C004	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW
C005	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW
C006	1-164-230-11	CERAMIC CHIP	220PF	50V	122-CC221J50TV
C007	1-164-230-11	CERAMIC CHIP	220PF	50V	122-CC221J50TV
C008	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW
C009	1-126-513-11	ELECT	47UF	6.3V	164-RE470M06
C010	1-126-513-11	ELECT	47UF	6.3V	164-RE470M06
C011	1-128-126-11	ELECT	100UF	25V	162-RV3101M25
C012	1-117-681-11	ELECT CHIP	100UF	16V	162-RV2101M16
C013	1-164-505-11	CERAMIC CHIP	2.2UF	16V	122-CY225Z16TX
C015	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C016	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C017	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C018	1-115-339-11	CERAMIC CHIP	0.1UF	50V	122-CY104Z50TX
C019	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C020	1-115-339-11	CERAMIC CHIP	0.1UF	50V	122-CY104Z50TX
C021	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW
C022	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C023	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW
C024	1-126-796-11	ELECT	22UF	25V	164-RE220M20
C025	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C026	1-128-126-11	ELECT	100UF	25V	162-RV3101M25
C027	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C028	1-164-457-51	CERAMIC CHIP	30PF	50V	122-CC300J50TV
C029	1-164-457-51	CERAMIC CHIP	30PF	50V	122-CC300J50TV
C030	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C031	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C032	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C033	1-126-796-11	ELECT	22UF	25V	164-RE220M20
C034	1-115-416-11	CERAMIC CHIP	1000PF	25V	122-CX102K50TV
C035	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW
C036	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C037	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C038	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C039	1-115-339-11	CERAMIC CHIP	0.1UF	50V	122-CY104Z50TX
C040	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C041	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C042	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C043	1-126-513-11	ELECT	47UF	6.3V	164-RE470M06
C044	1-126-513-11	ELECT	47UF	6.3V	164-RE470M06
C046	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C047	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C048	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C049	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C050	1-117-681-11	ELECT CHIP	100UF	16V	162-RV2101M16
C051	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C052	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C054	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C055	1-162-927-11	CERAMIC CHIP	100PF	50V	122-CC101J50TV
C056	1-162-927-11	CERAMIC CHIP	100PF	50V	122-CC101J50TV
C057	1-162-927-11	CERAMIC CHIP	100PF	50V	122-CC220J50TV
C058	1-162-927-11	CERAMIC CHIP	100PF	50V	122-CC220J50TV
C059	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C060	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C061	1-115-339-11	CERAMIC CHIP	0.1UF	50V	122-CY104Z50TX
C062	1-164-005-11	CERAMIC CHIP	0.47UF	25V	122-CY474Z50TX
C063	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C064	1-164-005-11	CERAMIC CHIP	0.47UF	25V	122-CY474Z50TX
C065	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C066	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C067	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C068	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C069	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C070	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C071	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C072	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C073	1-164-346-11	CERAMIC CHIP	1UF	16V	122-CY105Z25TX
C074	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW
C075	1-115-339-11	CERAMIC CHIP	0.1UF	50V	122-CY104Z50TX
C076	1-115-339-11	CERAMIC CHIP	0.1UF	50V	122-CY104Z50TX
C077	1-162-970-11	CERAMIC CHIP	0.01UF	25V	122-CX103K50TV
C078	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C079	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C080	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C081	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C082	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C083	1-131-992-11	CERAMIC CHIP	100000PF	35V	122-CY104Z25TV
C084	1-162-919-11	CERAMIC CHIP	22PF	50V	122-CC220J50TV
C085	1-162-921-11	CERAMIC CHIP	33PF	50V	122-CC330J50TV
C086	1-117-370-11	CERAMIC CHIP	10UF	10V	122-CY106Z10TW

A

REF.NO.	PART NO.	DESCRIPTION	REMARK
C087	1-117-370-11	CERAMIC CHIP 10UF 10V	122-CY106Z10TW
C088	1-117-370-11	CERAMIC CHIP 10UF 10V	122-CY106Z10TW
C089	1-117-370-11	CERAMIC CHIP 10UF 10V	122-CY106Z10TW
C090	1-117-370-11	CERAMIC CHIP 10UF 10V	122-CY106Z10TW
C091	1-117-370-11	CERAMIC CHIP 10UF 10V	122-CY106Z10TW
C092	1-117-370-11	CERAMIC CHIP 10UF 10V	122-CY106Z10TW
C093	1-164-346-11	CERAMIC CHIP 1UF 16V	122-CY105Z25TX
C094	1-164-346-11	CERAMIC CHIP 1UF 16V	122-CY105Z25TX
C095	1-131-992-11	CERAMIC CHIP 100000PF 35V	122-CY104Z25TV
C097	1-131-992-11	CERAMIC CHIP 100000PF 35V	122-CY104Z25TV
C098	1-164-505-11	CERAMIC CHIP 2.2UF 16V	122-CY225Z16TX
C099	1-131-992-11	CERAMIC CHIP 100000PF 35V	122-CY104Z25TV
C100	1-131-992-11	CERAMIC CHIP 100000PF 35V	122-CY104Z25TV
C101	1-162-921-11	CERAMIC CHIP 33PF 50V	122-CC330J50TV
C102	1-162-915-11	CERAMIC CHIP 10PF 50V	122-CC100J50TV
C105	1-115-416-11	CERAMIC CHIP 1000PF 25V	122-CX102K50TV
C106	1-115-416-11	CERAMIC CHIP 1000PF 25V	122-CX102K50TV
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CP002			137-010220T
CP003			137-010220T
CP004			137-010220T
CP005			137-010220T
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D001	1-807-635-11	DIODE RLZ5.1B	150-RLZ5V1B
D002	8-719-976-19	DIODE RLS-4148	151-RLS4148
D003	8-719-976-19	DIODE RLS-4148	151-RLS4148
D004	8-719-976-19	DIODE RLS-4148	151-RLS4148
D005	8-719-976-19	DIODE RLS-4148	151-RLS4148
D006	8-719-010-19	DIODE UZ-3.3BSA	150-RLZ3V3B
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F002	1-576-491-11	FUSE	147-BLMQ015
F003	1-576-491-11	FUSE	147-BLMQ015
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FBA1			282-1206A4Z121
FBA2			282-1206A4Z121
FBA3			282-1206A4Z121
FBA4			282-1206A4Z121
FBA5			282-1206A4Z121
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IC003	8-759-011-65	IC MC74HC4053F	160-HC4053T
IC004	8-759-661-55	IC 24LC21AT/SN	160-024021T
IC005	8-759-478-64	IC TDA7053A	160-07053A0
IC006	8-759-634-77	IC M51951BML	160-051951T
IC007	8-759-527-77	IC M24C16-MN6T	160-024016T
IC008	8-759-712-45	IC MTV130	160-MTV130T
IC009	8-759-541-69	IC SI786LG-T1	160-SI786CG
IC010	8-759-712-44	IC GMZAN1	160-00ZAN1T
IC011	8-759-712-43	IC MTV212M	610-5010V03
IC012	8-759-033-07	IC MC74F14M	160-F0140T
IC013	8-759-033-19	IC MC74F125M	160-F1250T
IC014	8-759-467-94	IC LM358D	160-035800T
IC015	8-759-510-72	IC LM393D	160-039300T
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L001	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L002	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L003	1-469-974-11	INDUCTOR 27UH	141-3L105270
L004			280-STC104B
L005	1-469-974-11	INDUCTOR 27UH	141-3L105270
L006	1-469-976-11	INDUCTOR 0UH	280-NGBMK400
L007	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L008	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L009	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L010	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L011	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L012	1-469-977-11	INDUCTOR 0UH	143-NG3216501
L013	1-469-975-11	INDUCTOR 15UH	141-3L105150
L014	1-469-978-11	INDUCTOR 0UH	143-3L350908
L015	1-469-976-11	INDUCTOR 0UH	280-NGBMK400
L016			280-STC104B
L017	1-469-973-11	INDUCTOR 0UH	281-NG2012102
L018	1-469-973-11	INDUCTOR 0UH	281-NG2012102
L019	1-469-973-11	INDUCTOR 0UH	281-NG2012102
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OSC1	1-795-092-11	OSCILLATOR, CRYSTAL	131-50000031
	<TRANSISTOR>		
Q001	8-729-054-62	TRANSISTOR SI4808DY	160-SI4808DY
Q002	8-729-054-62	TRANSISTOR SI4808DY	160-SI4808DY
Q003	8-729-054-61	TRANSISTOR SST3904T	170-SST3904
Q006	8-729-044-58	TRANSISTOR SI2304DS-T1	160-SI2304DS
Q007	8-729-054-61	TRANSISTOR SST3904T	170-SST3904
Q008	8-729-054-61	TRANSISTOR SST3904T	170-SST3904
Q009	8-729-029-06	TRANSISTOR DTC124EUA-T106	170-C124EUA
Q010	8-729-054-61	TRANSISTOR SST3904T	170-SST3904
Q011	8-729-054-60	TRANSISTOR SST3906T	170-SST3906
Q012	8-729-054-61	TRANSISTOR SST3904T	170-SST3904
	<RESISTOR>		
R001	1-216-295-00	SHORT 0	100-CR00JT10
R003	1-216-835-11	RES-CHIP 15K 1/16W	100-C153JT16
R004	1-216-295-00	SHORT 0	100-CR00JT10
R007	1-216-821-11	METAL CHIP 1K 1/16W	100-C102JT16
R008	1-216-833-11	METAL CHIP 10K 1/16W	100-C103JT16
R009	1-216-803-11	RES-CHIP 33 1/16W	100-C330JT16
R010	1-216-803-11	RES-CHIP 33 1/16W	100-C330JT16

REF.NO.	PART NO.	DESCRIPTION			REMARK
R011	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R012	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R013					100-C457JT08
R014	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R015	1-216-830-11	RES-CHIP	5.6K	1/16W	100-C562JT16
R019	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R020	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R021	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R024	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R025	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R027	1-216-809-11	METAL CHIP	100	1/16W	100-C101JT16
R030	1-216-864-11	SHORT	0		100-CR00JT16
R031	1-216-864-11	SHORT	0		100-CR00JT16
R034	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R035	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R036	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R037	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R038	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R039	1-216-811-11	RES-CHIP	150	1/16W	100-C151JT16
R040	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R041	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R042	1-216-624-11	METAL CHIP	75	1/10W	100-C750JT10
R043	1-216-624-11	METAL CHIP	75	1/10W	100-C750JT10
R044	1-216-624-11	METAL CHIP	75	1/10W	100-C750JT10
R045	1-216-811-11	RES-CHIP	150	1/16W	100-C151JT16
R046	1-469-973-11	INDUCTOR 0UH			281-NG2012102
R047	1-469-973-11	INDUCTOR 0UH			281-NG2012102
R048	1-469-973-11	INDUCTOR 0UH			281-NG2012102
R049	1-469-973-11	INDUCTOR 0UH			281-NG2012102
R050	1-469-973-11	INDUCTOR 0UH			281-NG2012102
R051	1-469-973-11	INDUCTOR 0UH			281-NG2012102
R052	1-469-973-11	INDUCTOR 0UH			281-NG2012102
R056	1-216-811-11	RES-CHIP	150	1/16W	100-C151JT16
R057	1-216-811-11	RES-CHIP	150	1/16W	100-C151JT16
R058					100-C457JT08
R059	1-216-809-11	METAL CHIP	100	1/16W	100-C101JT16
R060	1-216-809-11	METAL CHIP	100	1/16W	100-C101JT16
R061	1-216-811-11	RES-CHIP	150	1/16W	100-C151JT16
R062	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R063	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R064	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R065	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R066	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R067	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R068	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R069	1-216-811-11	RES-CHIP	150	1/16W	100-C151JT16
R070	1-216-659-11	METAL CHIP	2.2K	1/10W	100-C222JT10
R074	1-216-801-11	METAL CHIP	22	1/16W	100-C220JT16
R075	1-216-801-11	METAL CHIP	22	1/16W	100-C220JT16
R076	1-216-845-11	METAL CHIP	100K	1/16W	100-C104JT16
R077	1-216-845-11	METAL CHIP	100K	1/16W	100-C104JT16
R078	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R079	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R080	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R081	1-216-295-00	SHORT	0		100-CR00JT10
R082	1-216-850-11	RES-CHIP	270K	1/16W	100-C274JT16
R084	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R085	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R086	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R087	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R088	1-216-864-11	SHORT	0		100-CR00JT16
R090	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R091	1-216-864-11	SHORT	0		100-CR00JT16
R092	1-216-841-11	METAL CHIP	47K	1/16W	100-C473JT16
R093	1-216-295-00	SHORT	0		100-CR00JT10
R094	1-216-817-11	METAL CHIP	470	1/16W	100-C471JT16
R095	1-216-817-11	METAL CHIP	470	1/16W	100-C471JT16
R096	1-216-801-11	METAL CHIP	22	1/16W	100-C220JT16
R097	1-216-803-11	RES-CHIP	33	1/16W	100C330JT16
R098	1-216-841-11	METAL CHIP	47K	1/16W	100-C473JT16
R099	1-216-864-11	SHORT	0		100-CR00JT16
R100	1-216-850-11	RES-CHIP	270K	1/16W	100-C274JT16
R101	1-216-850-11	RES-CHIP	270K	1/16W	100-C274JT16
R102	1-216-850-11	RES-CHIP	270K	1/16W	100-C274JT16
R103	1-216-850-11	RES-CHIP	270K	1/16W	100-C274JT16
R104	1-216-850-11	RES-CHIP	270K	1/16W	100-C274JT16
R105	1-216-825-11	METAL CHIP	2.2K	1/16W	100-C222JT16
R106	1-216-821-11	METAL CHIP	1K	1/16W	100-C102JT16
R107	1-216-809-11	METAL CHIP	100	1/16W	100-C101JT16
R108	1-216-817-11	METAL CHIP	470	1/16W	100-C471JT16
R110	1-216-864-11	SHORT	0		100-CR00JT16
R111	1-216-835-11	RES-CHIP	15K	1/16W	
R112	1-216-821-11	METAL CHIP	1K	1/16W	100-C102JT16
R113	1-216-809-11	METAL CHIP	100	1/16W	100-C101JT16
R114	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R116	1-216-864-11	SHORT	0		100-CR00JT16
R118	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R119	1-216-829-11	METAL CHIP	4.7K	1/16W	100-C472JT16
R120	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R121	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R122	1-216-833-11	METAL CHIP	10K	1/16W	100-C103JT16
R123	1-216-821-11	METAL CHIP	1K	1/16W	100-C102JT16
R124	1-216-821-11	METAL CHIP	1K	1/16W	100-C102JT16
R125	1-216-817-11	METAL CHIP	470	1/16W	100-C471JT16
R126	1-216-864-11	SHORT	0		100-CR00JT16
R127	1-216-864-11	SHORT	0		100-CR00JT16
R128	1-216-811-11	RES-CHIP	150	1/16W	100-C151JT16
R131	1-216-817-11	METAL CHIP	470	1/16W	100-C471JT16
	<CRYSTAL>				
X001	1-795-093-11	OSCILLATOR, CRYSTAL			131-11059201

****

H MOUNT

****

<DIODE>

D801 153-12597G418

H J1 J2

REF.NO.	PART NO.	DESCRIPTION			REMARK
	<SWITCH>				
S801	1-571-404-11	SWITCH, KEY BOARD			202-HJTSAC2
S802	1-571-404-11	SWITCH, KEY BOARD			202-HJTSAC2
S803	1-571-404-11	SWITCH, KEY BOARD			202-HJTSAC2
S804	1-571-404-11	SWITCH, KEY BOARD			202-HJTSAC2
S805	1-571-404-11	SWITCH, KEY BOARD			202-HJTSAC2
S806	1-571-404-11	SWITCH, KEY BOARD			202-HJTSAC2
S807	1-571-404-11	SWITCH, KEY BOARD			202-HJTSAC2
		J1 MOUNT			
	<CAPACITOR>				
C901	1-130-495-00	MYLAR	0.1UF	50V	122-10425ZYF
C902	1-104-666-11	ELECT	220UF	25V	120-22725SM
C903	1-102-074-00	CERAMIC	0.001UF	50V	122-102
C904	1-102-074-00	CERAMIC	0.001UF	50V	122-102
	<DIODE>				
D901	1-808-077-11	DIODE SB540			150-00SB540
D902	8-719-991-33	DIODE 1SS133T-77			152-0141480
D906	8-719-109-85	DIODE MTZJ-T-72-5.1B			150-01051B0
D907	8-719-109-85	DIODE MTZJ-T-72-5.1B			150-01051B0
D908	8-719-109-85	DIODE MTZJ-T-72-5.1B			150-01051B0
D909	8-719-109-85	DIODE MTZJ-T-72-5.1B			150-01051B0
D910	8-719-109-85	DIODE MTZJ-T-72-5.1B			150-01051B0
D911	8-719-109-85	DIODE MTZJ-T-72-5.1B			150-01051B0

REF.NO.	PART NO.	DESCRIPTION			REMARK
	<JACK>				
J901	1-779-745-21	JACK, DC			203-0139001
J902	1-573-792-11	CONNECTOR, MINIATURE DIN 4P			203-0411041
J903	1-774-361-11	CONNECTOR, D SUB 15P			203-1511201
J907	1-507-834-31	JACK			203-013509D
	<COIL>				
L901					143-BWR6H0610
L902	1-469-978-11	INDUCTOR 0UH			143-3L350908
		J2 MOUNT			
	<CAPACITOR>				
C701	1-126-791-11	ELECT	10UF	16V	120-10616SS
C702	1-126-791-11	ELECT	10UF	16V	120-10616SS
	<JACK>				
J701	1-507-899-31	JACK (SMALL TYPE)			
	<RESISTOR>				
R701	1-215-401-11	METAL	150	1/4W	100-151
R702	1-215-401-11	METAL	150	1/4W	100-151

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